THE
Mystery of Husbandry:
OR,
Arable, Pasture, and Wood-land
IMPROVED.

Containing the whole Art and Mystery of Agriculture or Husbandry, in Bettering and Improving all Degrees of Land, fertilizing the barrenest Soil, recovering it from Weeds, Bushes, Briars, Rushes, Flags, Overflowings of salt or unwholsom Waters, to bear good Corn, or become Meadow or Pasture.

Directions for Marling, Dunging, Mudding, Sanding, Flowing, Trenching, and other Methods of Improving Land to the best Advantage.

Proper Times for Sowing, chusing good Seed, and Ploughing; with the Description of useful Ploughs suitable to the different sorts of Ground, *&c.*

How to keep Corn, and other Pulse, from being destroyed by Birds, Vermin, Lightning, Mildew, Blasts, Smuttiness, cold Winds, *&c.* Harvest-work, Inning or Stacking, *&c.*

The best Graineries for preserving Corn and Pulse, *&c.*

How to know smutty or washed Corn from other.

Proper Tools for Husbandry and Day-labour computed.

Improvement of Land by Turneps, Carrots, Saffron, Madder, Hops, Would or Wead, Coal, Seed, Hemp, Flax, Clover, St. *Foin*, *&c.*

Wood-land to improve, in setting, lopping, and managing to a vast Increase; the great Advantage of Inclosures, *&c.*

To which is added,

The Countryman's ALMANACK.

By *LEONARD MEAGER*

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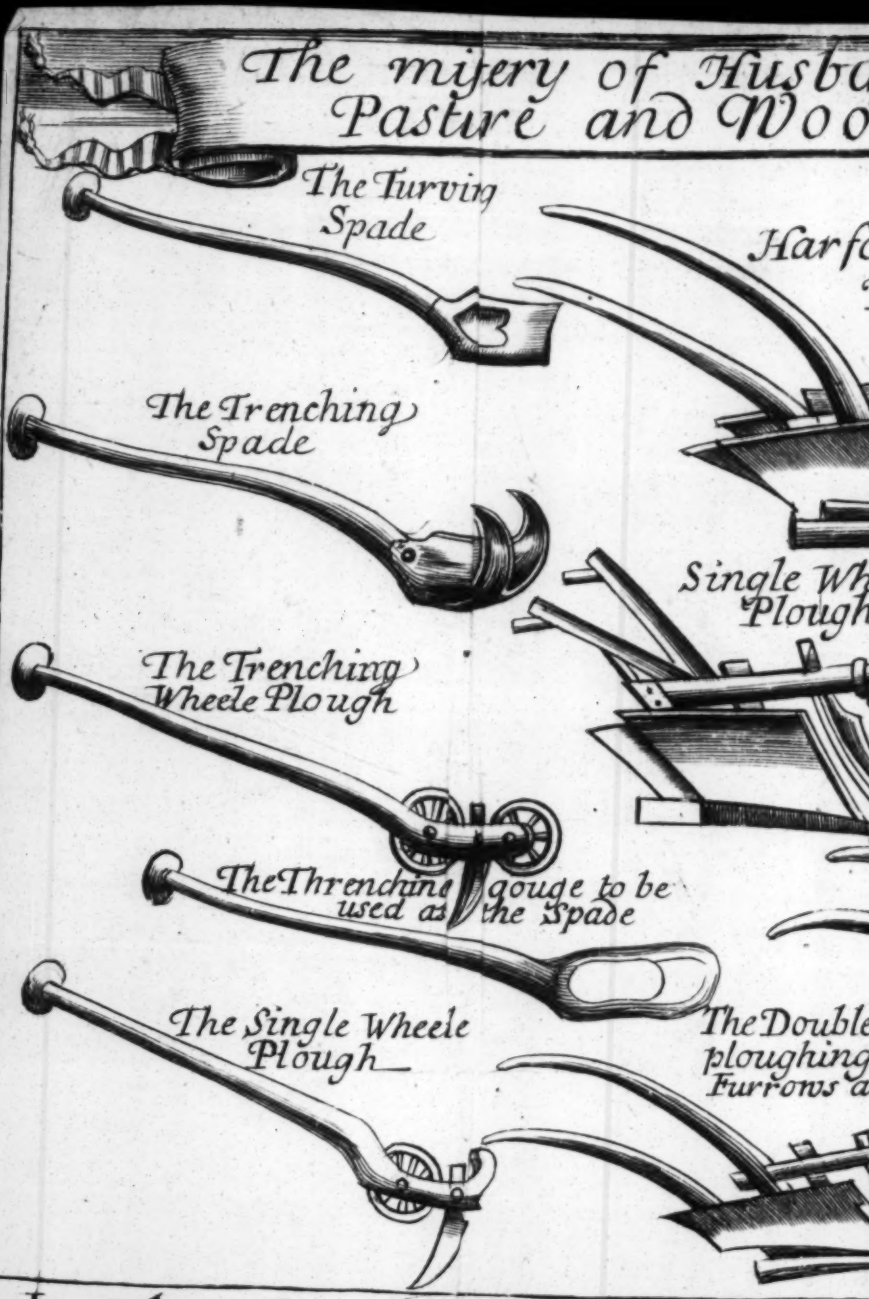
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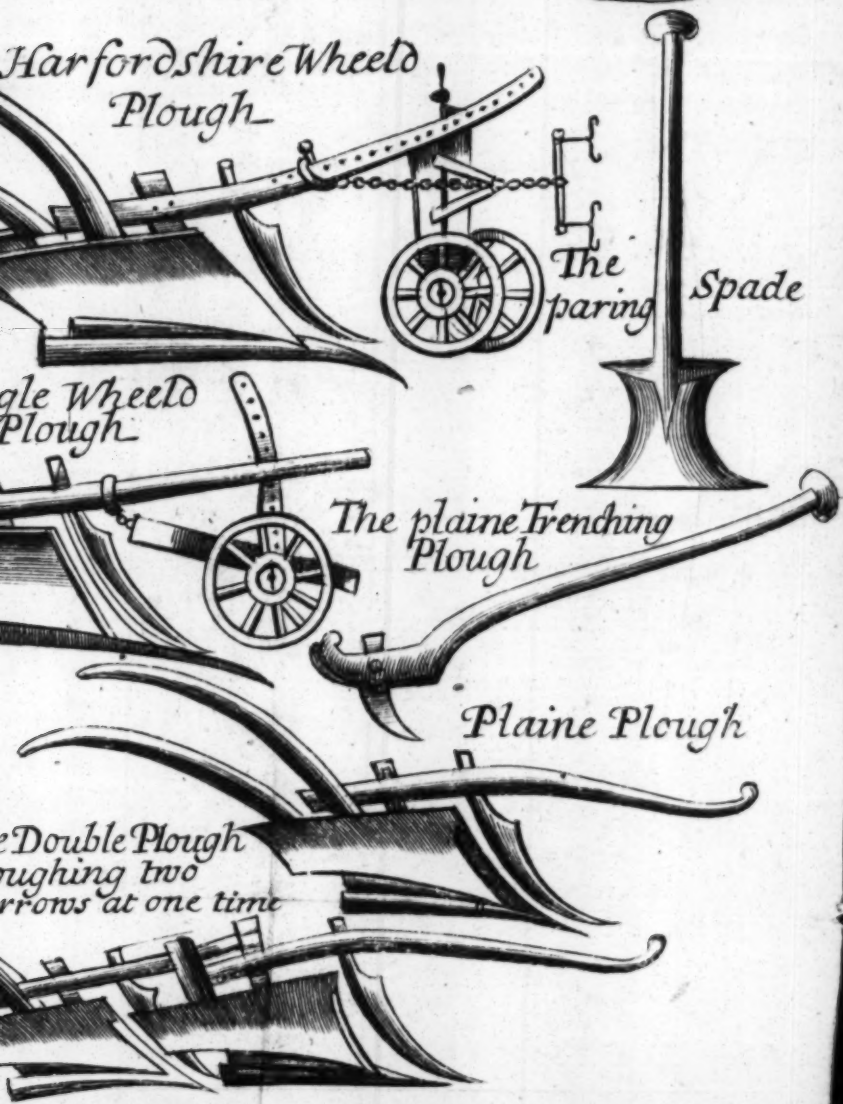

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THE PREFACE TO THE READER.

READER,

HAving well weighed and conſidered with mature Deliberation, that a Work of this nature cannot but be grateful to my Country, I have the more laboured to bring it to the higheſt Pitch of Improvement, ſupplying what has been omitted by others, who have with ſome Diligence and Induſtry attempted to compile a compleat Body of Agriculture; or to lay down ſuch material things, as might redound to the bettering the Knowledge of the Ingenious Countryman, to make his Charge and Labour anſwer his Expectation, but have, in many matters, upon Experience, come ſhort of what was, no doubt, well meant, becauſe moſt of them had not practiſed what they writ, but

were obliged to borrow them from others, and take them on Truſt, and many of them from Foreign Authors; not well conſidering, that differing Climates produce different Effects, though things are managed one and the ſame way: For what the Ground in one Country will kindly produce, that in another, through too much Heat, Cold, or Moiſture, will not, though the Soil be much of the like Temper; in which, were it not for Brevity's ſake, I could give many convincing Inſtances.

Theſe things, I ſay, conſider'd, I have grounded this Work upon long Experience, and truly proved to my great Advantage whatever I have laid down; which I have done in as eaſie a Method, and as practicable as can be; and, as I think, have omitted nothing that is proper for ſuch a Treatiſe. I have given you the proper Manures, the Nature of the ſeveral ſorts of Lands, and the true way of improving them from little or no Value to great Advantage. Alſo an exact Method for draining all ſorts of Land, and for floating it, as occaſion requires; with the Deſcription of Tools, and proper Engins for the Work and Management: The beſt Methods for Ploughing and Sowing, the laying of Land, and the diſtributing of Grain, and every thing elſe that is neceſſary, from its ſpringing up, till it is ſold and delivered in the Market. To which I have ſubjoined many other rare

and

and profitable Improvements of Barren Land, known to few, and practiſed by leſs; becauſe ſome have already been diſcouraged herein, for want of well-grounded Notions to further them in the true Experiment; it being too much the Nature of Engliſh-men, in matters of expected Profit, to be too ſoon diſcouraged, if things at firſt fail to ſucceed to their Wiſh.

I have further conſidered every thing that is uſeful relating to Wood-lands, or Improvement of Lands to a vaſt Value, by ſetting Trees, with all the Meaſures of ordering them; and laid down many convincing Reaſons for the promoting of Incloſures, anſwering the Objections of Commoners, and others, who oppoſe it, to their own great Diſadvantage, out of Obſtinacy or fooliſh Cuſtom, when by this means vaſt numbers of poor People might be ſet on work at preſent, and for the future be well maintained, if not enriched by the Advantage ariſing thereby.

And, to make this Work more compleat, I have added an Almanack, containing Prognoſticks of Weather, Seaſons, Obſervations of the Year from Critical Days, and what is proper in many Particulars to be obſerved in every Month, as well in Affairs, as to keep and order the Body, and to continue it in a healthful Temper, and for Seven Years to come. Among ſundry other things, too tedious here to mention, I have ſet down the exact

Fallings out of the Movable Feſtivals, and when the Movable Terms begin and end. So that, I conceive, I have laboured to the purpoſe, and therefore cannot but reaſonably hope this Work will find Acceptance. In expectation whereof, that I may be the further encouraged to do for the publick Good, I am, kind Reader,

Your Friend and Humble Servant,

L. M.

THE

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THE

THE
Mystery of Husbandry:
OR,
rable, Pasture, and Wood-Land
IMPROVED.

The INTRODUCTION.

the Excellency, Necessity, and Usefulness of the Advancement of Good Husbandry.

THE Excellency of Husbandry appeareth partly by its Antiquity, as we esteem Things to be the more Admirable, the more Ancient, and the nearer they come to God, the First Being Beings; for as all Things nearer the Centre move strongly, so all Excellency appears most evidently nearer (if I may speak with Reverence) to the Great ty, the Almighty Husbandiser, God himself. First, s Making the World: He made all Creatures, all ts, Fruits, Trees, Herbs, and all Things bearing for the Food of Man and Beast; God also made these Excellent and Glorious Creatures, as the Light, the Day, the Firmament, the Earth, and Seas, the Sun, Moon, and Stars, all to be Serviceable, and Ministers to the Creatures Relief, and all the Creatures subservient to Man,

and Man to Overlook, Cheriſh, and Improve the Fruits of the Earth, and Dreſs and Keep them for the Uſe of the whole Creation. So that God was the Original and Pattern of all Huſbandry, and Firſt Contriver of the Great Deſign, to bring that odd Maſs, and Chaos of Confuſion, unto ſo vaſt an Improvement, as all the World admires and ſubſiſts on: And having given Man ſuch a Pattern, both for Precept and Precedent for his Encouragement, he made him Lord of all until he fell; and after that, God intended the Preſervation of what he made, notwithſtanding the Great Curſe upon *Adam*, *Eve*, and the *Serpent*, the Earth not being free from it, but a Curſe of Barrenneſs caſt upon it alſo, yet *Adam* was ſent forth to Till the Earth, and Improved it, in the Sweat of his Face he muſt eat Bread, until he return to the Earth again; and ſo down to *Abel*, the one Husbanding the Earth for Tillage, and the other the Sheep, in Paſturing and Grazing; and ſo down to *Noah*, the firſt Planter of the Vine, he began to be an Husbandman; and to *Abraham*, and to *Jacob*, and to *Eſau*, and ſo along from the Patriarchs, till they came to the Government of Kings, where *Uzziah*'s Commendation was, *That he loved Husbandry*, 2 Chron. 26. 11. And many excellent Things, as if Husbandry were moſt excellent, as indeed it is, here on Earth, where *Solomon*, the Wiſeſt Man, was the Second Husbandman, or Improver of the World, whom you ſhall find, out of the Depth of his Experience, to cry up Diligence and Activity in good Husbandry, and therefore he ſendeth us to the Piſmire, declaiming againſt the Sluggard and Slothful, *On whom*, ſaith he, *cometh poverty as an armed man.* He extols the Diligent, as fitteſt to Converſe with Kings, when the Idle ſhall be under Tribute. For the Uſefulneſs of it, it is no leſs than the Maintenance of our Lives, Eſtates, the Common-wealth, and an Advancement and Improvement of the Fruits and Profits of the Earth by Ingenuity, is little leſs than an Addition of a New World; for what is gained hereby, either above the Natural Fruitfulneſs of the Earth, or elſe by Reducement of that which is Deſtroyed, or Impoveriſhed from its Natural Fruitfulneſs, to a greater Fertility, is a clear Argumentation and

Addition

Addition to the Honour and Profit of our *Engliſh* Nation: All other Callings but proceeding hence, the Earth being the very Womb that bears all, and the Mother that muſt nouriſh and maintain all. The Merchant is a gallant Servant to the Common-wealth, he fetches his Riches from far, and he is a worthy Contributer to the Wealth and Proſperity of the Kingdom; but he produceth it from others, who could themſelves make great Profit of it, and though he gaineth a great Eſtate, yet he raiſeth it not out of nothing, but parts with Gold and Silver, and with Commodities for it: But this Merchant of Husbandry, he raiſeth it out of the Earth, which otherwiſe would yield little, unleſs his Ingenuity digged and fethed it out; otherwiſe, poſſibly it had never been ſo diſcovered, as to have been there. And what parts he with for it? What Rates purchaſeth he it at? Even only by his ingenuous Induſtry, and with the Wages of the Labouring Man, whom he is bound both by the Laws of God and Nature, to allow a Competent Maintenance. Oh, the Excellency, Integrity, and Uſe of Husbandry; *Prov.* 11. 26. *A bleſſing is on the head of him that tilleth corn, and the thoughts of the diligent bring abundance.* To conclude with few words: As for the Terms of Husbandry, I reſolved to deliver my ſelf in our own Native Country's ordinary and home-ſpun Language, not ſlighting thoſe ancient Terms which are uſed in ſeveral Countries, the better to acquaint my Countrymen with them; all which I ſhall do as briefly as poſſibly I may, to render my ſelf acceptable to my Reader's cleareſt Apprehenſion.

CHAP. I.

How to know the Goodneſs of the Ground.

MAny count that to be the beſt Ground, that lieth at the foot of a Hill, being level, and towards the Sun, in Cold and Northerly Countries, it is good to have the Land to be Eaſt and South, leaſt theſe two Quarters, being hard off by an Hill, the Land be frozen with Cold: but in hot Countries, it is better to have the Ground lie North, both for Pleaſure and Health. You may ſooner know the Conditions of every Ground, than of Men themſelves; for the Ground being well Tilled, can hardly deceive you. To know the Nature therefore of every Ground, you muſt mark well the Plants, and the Yield of the Country, except you will loſe your Labour, look whether there be in the Land, either Stone, Marble, Sand, Gravel, Raddel, Chalk, Clay, Prebile, or Carbuncle, that is, Ground over-heated and parched with the Sun, which will burn the Roots of whatſoever cometh in it. Alſo, if it be wet or weeping Ground, or ſubject to ſuch other Inconveniences, and ſuch Ground alſo, according to the Natures of the Soyl, is good or evil. In ſome Countries Stone Ground is altogether barren, eſpecially for Corn and Fruit: in other Places again, they uſe Stones in the Manuring and Bettering of their Ground. In ſome places, in ſtony and hilly Ground, Oats do proſper well. In like manner alſo, in all Countries, you muſt regard the Layre of the Country, and the Nature of the Seed that we ſow: for Gravel in ſome places is caſt upon the Ground, inſtead of Dung, and ſome Things proſper beſt in Gravelly Ground. It is alſo ſomething to the purpoſe, whether the Gravel be White, Red, or Yellow: beſides, pure Ground doth deceive both with Colour and Quality. In ſome Countries the black Mould is only eſteemed: in others, the fat red Mould is thought beſt. In other places the chalky Ground beareth good Corn, and Paſtures very well. In ſome

places

places the thick and clammy Ground is moſt fruitful; in all theſe it is to be learned, what is beſt for the hilly Ground, what for the Valley, what for the Tilled, what for the Lay Ground, what the moſt Sedgy Ground requires, and what the Dry and Barren. Alſo in Planting, what Ground is beſt for Vines, what for other Trees; what delights in dry Ground, and what in moiſt Ground. *Virgil* commendeth a Ground that is fat; for ſuch Ground is Tilled with ſmalleſt Charge and Labour: the next, that which is fat and ſtiff, which greatly recompenſeth the Huſbandman's Travail and Charges: the worſt, is, that which is dry, lean, and ſtiff; for it is not only Tilled with great pains, but alſo, it doth not anſwer the Huſbandman's Expectation in his Crop, neither at any time ſerveth it for good Meadow, or Paſture, and therefore ſuch Ground is not to be medled withal. Alſo the Goodneſs of the Ground, may be eaſily perceived by theſe Signs, and following Tokens: For a cold Clod ſprinkled with a little Water, if in working with the Hand it be clammy, and cleaving, and ſticketh to the Fingers like Pitch, when it is handled, and breaketh not in falling to the Ground, this ſheweth a Natural Fatneſs and Richneſs to be in it; beſides, you may know the Mould that is good for Corn, if it bear Burnſhes, Thiſtles, Three-leaved Graſs, Dunwort, Brambles, Black Thorn, and ſuch-like, as never grow (but for the moſt part) in good Ground: as on the other ſide, the loathſome and ill-favoured Weeds, declare a lean and a bitter Ground: Fern, and withered Plants, a cold Ground; ſad and heavy coloured, a moiſt and a wet Ground; a raddel and a ſtony Ground, is diſcerned by the Eye; a ſtiff and a tough Clay, by the Labour and Toil of the Oxen. It is alſo a Sign of a good Ground, where the Crows and Pies, in great Numbers, follow the Plough, ſcraping in the Steps of the Ploughman. The Goodneſs is likewiſe known, if at the Sunſetting, after a Rainbow, and in a Shower of Rain, following a Drought, it yieldeth a pleaſant ſuccour. Alſo, in Taſte it will appear: if Taſting of a Clod that hath been Watered in an Earthen Veſſel, you find it ſweet, it is a ſign of a rich Ground; if bitter, a great Token of bar-

ren Ground; if it be ſaltiſh, it is to be ſhunned, and not to be uſed. You muſt take Notice that Ground will alſo change, and of fruitful become barren; which hath been ſeen in ſeveral places of our Country. Beſides, one kind of Ground, though it be never ſo fertile, will not bear all things. Moreover, the Diſpoſition of the Heavens is a great matter, all Countries have not the Weather and Air alike; wherefore, it is the part of a good Huſbandman, to know the Nature and Properties of his Ground, and to mark the Diſpoſition of it for every Seaſon of the Year: he muſt alſo conſider, what Crop is beſt for every Layer. Some Ground ſerveth for Corn, ſome for Meadow, ſome for Paſture, neither may all things be well ſown in rich Ground, nor nothing in barren Ground. Such things as need not much moiſture, are beſt ſown in light Ground, as the great Claver, Spery, Chich, and the other Pulſes that are pulled, and not cut. Thoſe that require much Suſtenance, are ſown in richer Ground, as Pot-herbs, Wheat, Rye, Barley, Linſeed: ſome of them do good in the Year following, as Lupines, that are uſed to be ſown for the bettering of the Ground. There is Difference alſo to be put, betwixt Fruits for Pleaſure, and ſuch as are for Profit as Fruit-Trees and Flowers, and ſuch Things as yield both Pleaſure and Suſtenance, and are alſo profitable to the Ground. You muſt chooſe for Willows, Oſiers, and Reeds, a wet and marſhy Ground; and contrary, where you will have Corn and Pulſe, that delights in dry Ground. Sperage, and ſuch-like, muſt be ſown in ſhady places, and other Ground for Quickſets, Timber, Maſt, and Fewel: yea, ſuch Ground as is very gravelly and barren, hath its uſe, where you may plant Birch, and ſuch-like; and watry Grounds, where you may ſet Alders, Broom, Bull-ruſhes, &c.

CHAP.

CHAP. II.

Of the Dunging of Ground.

SInce in all places the Ground is not of a like goodneſs, if we chance upon a lean, and a barren Ground, as heathy, bruſhy, and gravelly Ground, we muſt endeavour to make theſe fruitful, and to mend them by Art; for there is no Country that our moſt Gracious GOD hath left without ſufficient Yield, if we uſe but our Induſtry, which may be happily employed divers ways, principally by Dunging, and diligent Labour. To which purpoſe, it will be neceſſary for us to know, what Dung doth moſt enrich the Earth: The moſt Expert of the Ancient Huſbandmen, appoint three ſorts of Dungs: the firſt of Poultry, the next of Men, the third of Cattel. Of the firſt ſort, the beſt is had out of Dove-Houſes; the next is of Pulline, and other Fowl, except Geeſe and Ducks, which is hurtful. The Ancients had ſuch ſtore of Poultry and Fowl, as the Dung of them is ſaid to have ſufficed for the Manuring of their Ground. The next to this, is Man's Ordure, if it be mixt with other Rubbiſh of the Houſe: for of itſelf it is too hot, and burns the Ground. Man's Urine, being kept ſix Months, and poured upon the Roots of Apple-trees, and Vines, cauſeth them to be very fruitful, and giveth a pleaſant Taſte to the Fruit. In the third place, is the Dung of Cattel, whereof the beſt is the Dung of Aſſes, becauſe this Beaſt doth chew with the moſt leiſure, whereby his Meat being well digeſted, is made the profitabler Dung. Next to this, is, the Dung of Sheep, next of Goats, then of Oxen, and Horſes. The worſt of Swine, very hurtful to the Corn, but uſed in ſome Places for Gardens, for want of other Dung, it is a great Breeder of noyſom Weeds. The Dung of Horſes likewiſe, where they are fed with Barley, doth breed Weeds. The Lupine, before he bear his Cod, is moſt commended, being turned up with the Plough or Mattock, and laid in

Bundles about the Roots of Trees or Vine. Where they have no ſtore of Cattel, they uſe to mend their Ground with Straw and Fern, and with the Stalks of Lupines, and the Branches laid together in ſome Ditch: hereunto you may caſt Aſhes, the Filth of Sinks and Privies, Straw, and other things raked together: but in the midſt you muſt lay ſome ſound Subſtance, againſt the Breeding of Adders and Snakes: alſo Hemlocks, Walwort, and the Weeds growing about Willow-Trees, and Fern, with other ſuch rotten Weeds, you may gather and lay under your Sheep. They that dwell in gravelly and heathy Grounds, do take the Turns of the Earth and Heath, and laying them in Heaps, poudred with a little Dung, ſuffer them to lie and rot, and after lay it on barren Ground, but more eſpecially when they keep great ſtore of Sheep, they caſt into their Folds ſuch Turns pared from the Ground; *Columella* counts them but bad Huſbands, that have of every one of the leſſer kind of Cattel, leſs than a Cartload of Dung in Three hundred Days, and each of the greater ſort ten Load, beſides the Filth and Dirt of the Yard. This is alſo to be taken Notice of, that the Dung that hath lain a Year, is beſt for the Corn, for it both is of ſufficient ſtrength, and breedeth leſs Weeds; but upon Meadow and Paſture, you muſt lay the neweſt, becauſe it brings moſt Graſs; and this muſt be done in *February*, the Moon encreaſing; for this is the beſt time to cauſe increaſe of Graſs.

In the Manuring of your Ground, look that you lay moſt Dung upon the top of the Hill, for the Rain will drive it into the lower parts faſt enough.

He that intends to have his Ground to bear much Corn, if he mean to Sowe in the end of the Summer, muſt turn in his Dung in *September*; if in the Spring, he may lay it on in any time of the Winter. What time ſoever he doth it, he muſt look that the Wind be Weſterly, and the Moon in the Wayne. Beſides, he muſt be ſure, that the Dung be dry when he lays it on the Ground; for laying it on while it is moiſt, it doth more harm to the Ground than good, as daily Experience teacheth. Now as our Land will wax cold, if it be not Dunged, ſo will it be

dried or burnt, if it be Manured yearly, or too much. The watry Ground requireth more ſtore of Dung, and the dry Ground the leſs.

In ſome places, the Scouring of Ponds and Ditches is uſed, to the great enriching of the Ground; in mountainous and barren Lands, they make their Land fruitful with laying on of Chalk; but long uſe of it makes the Gronnd ſtark nought: from whence it is grown a common Saying, *That Ground enriched with Chalk, makes a rich Father, and a beggarly Son.*

The River-Land, by overflowing, and faſt Ground with muddy, mingled with Sand and Gravel, will do very well.

CHAP. III.

The Nature, Uſe, and Benefit of Marl.

THE *Germans*, beſides other ſorts of Enriching their Grounds, do, in ſome places, inſtead of Dung, caſt upon it a kind of a Pitch and Fatneſs of the Earth, (*Pliny* would have it to be firſt deviſed in *England* and *France*) called, *Marga*, as it were, the Fat of the Earth: it is gotten in deep Pits, but not alike in all Soyls. Queſtionleſs, Marle is a very uſeful thing, the Nature of it cold; which is the Reaſon that it ſaddens the Land exceedingly, and very heavy it is, and will go downward.

Some Countries yield Marle of ſeveral Colours, as 'tis affirmed of *Kent*, where 'tis found both Yellow, Grey, Blew, and Red; the Blew and Grey are counted the beſt: for to Marle together, I hold not proper; but when you reſolve to lay down your Land to Graze, be ſure at the laſt Crop you intend to take, (which may be two or three more after Marling) then Manure your Land with Dung, which will open, lighten, and looſen the Land: for the leſs binding, and the more light, looſe, and open, the more fruitful it is, ſo that it will produce a gallant Clovery.

The firſt Year after you have laid it down upon the Wheat, or mixed Corn-ſtubble, you ſhould run it over again with Dung, and it will pay treble.

The Lands upon which Marle is moſt natural for increaſe, is upon the higher ſandy Land mixed of Gravel, or any ſound Land whatſoever, though never ſo barren, to which it is natural, and nouriſhing, as Bread to Man's Life.

CHAP. IV.

Of Ploughing, the Parts of the Plough, and the beſt Seaſon for Ploughing.

IN Ploughing and Ordering, and right Preparing the Ground for Seed, conſiſts the chiefeſt Point of Huſbandry. The moſt Experienced affirm, That the firſt Point of Huſbandry, is to Prepare the Ground; the ſecond, to Plough it well; and the third, to Dung it well. The Faſhions are divers, according to the Nature of every Soyl and Country. All great Fields are Tilled with the Plough and Share, the leſſer with the Spade.

The Ploughs, ſome are ſingle, ſome double, of ſundry Faſhions, according to the diverſity of the Countries; ſome are with Wheels, ſome without.

The Parts of the Plough are, the Tail, the Shelf, the Beam, the Foot, the Coulter, the Share, the Wheels, and the Staff. The Share is that which firſt cuts the way for the Coulter, that afterwards turns up the Furrow, where the Ground is light, they uſe only a ſmall Share.

In *Liſland*, they have for their Plough, nothing but a Fork. In *Syria*, where they cannot go very deep, they uſe (as *Theophraſtus* ſaith) very little Ploughs. *Pliny* writes, that Wheels for Ploughs were deviſed by the *Frenchmen*, and called *Plugrat*, a *German* Name, which is corruptly printed *Plaumrati*.

In

In divers places where the Ground is ſtiff, they have a little Wing on the right ſide of the Coulter, which Wing is to be removed to which ſide you liſt: with the Rod or Staff, well pointed, the Plough-man maketh clean his Coulter, when he works.

The Oxen muſt be yoaked even together, that they may draw the more handſomely, with their Heads at liberty, that their Necks may not be hurt. This kind of Yoaking is better liked of many, than to be yoaked by the Horns: for the Cattel ſhall be able to draw better with the Neck and the Breaſt, than they ſhall be with their Heads: and this way they put too the force of their whole Bodies, whereas the other way (being reſtrained by the Yoak, and their Heads) they are ſo vexed and hindred, as that they can ſcarcely race the upper part of the Earth.

Where Horſes may be uſed, they are more commodious for the Plough, and the fewer of them the better: for many Horſes draw too haſtily, and make too large Furrows, which is not good: whereas we ſee the Ground to be excellently well ploughed in *Gelderland*, and about *Cologne*, where they plough only with two Horſes, going very ſoftly.

In *France*, and other places, where they plough with Oxen, they make their Furrows rather deep than broad. Where the Ground is ſtiff, the Coulter muſt be the greater and the ſtronger, that it may go the deeper: for if the Cruſt of the Earth be turned up very broad, it remaineth ſtill whole, whereby neither the Weeds are killed, nor the Ground can be well harrowed. The Furrow ought not to exceed One hundred and twenty foot in length; for if it do, as ſome hold, it is hurtful to the Beaſts, becauſe it will be too wearieſome to them: but this Rule is not obſerved, as in the Countries where the Fields are great, their Furrows are drawn very long.

You muſt not plough in wet Ground, nor when after a long Drought, a little Rain falling, hath but wet the upper part, and not gone deep. If it be too wet when it is ploughed, it will do little good that Year, you [illegible] therefore obſerve, that the Seaſon be neither too [illegible]

nor

nor too wet: for too much drineſs cauſeth it, that it will never work well; for either the hardneſs of the Earth will reſiſt the Plough, or if it does enter, it breaks it not ſmall enough, but only turneth up great Flakes hurtful to the next Ploughing. For though the Land be never ſo rich, yet if you go any depth, it will prove barren, which is turned up with great Clods, from whence it proceeds, that the bad Mould mixt with the good, yieldeth the worſer Corn.

Where you have ploughed in a dry Seaſon, it will be convenient for you to have ſome moiſture in your ſecond ſtirring, which moiſtning the Ground, ſhall make your Labour the eaſier. When the Ground is rich, and hath long born Water, it is to be ſtirred when the Weather is warmer, and when the Weeds are full grown, and have their Seeds in their top, which being ploughed ſo thick, as you can ſcarce ſee where the Coulter hath gone, utterly killeth and deſtroyeth the Weeds: beſides, through many ſtirrings, your Fallow is brought to ſo fine a Mould, as that it ſhall need little or no Harrowing, when you Sowe it: for the old *Romans*, as *Columella* affirms, would ſay, That the Ground was ill huſbanded, that after Sowing had need of the Harrow.

Moreover, the good Huſbandman muſt try whether it be well ploughed or not, and not only to truſt to his Eyes, but to Experience with his hand, (otherwiſe the Balkes being covered with Mould) he may eaſily be deceived, ſo that he muſt be upon certain proof; to which purpoſe, let him thruſt down a Rod into the Furrow, which if it pierce alike in every place, it ſheweth that the Ground is well ploughed. If it be ſhallow in one place, and deep in another place, it ſignifies that the Ground was not well ploughed.

If you are to plough upon a Hill, you muſt plough overthwart, and not up and down: for thereby the inconvenience of the ſteepneſs is met withal, and the Labour both of the Men and Cattel is eaſed; but herein you muſt be careful, that you plough not always one way, but ſometimes higher, ſometimes lower, working aſlope as you ſhall ſee cauſe.

Touching

Touching the Season of Ploughing, it must be chiefly in the Spring; for in Summer the Ground is too hard, and in Winter too foul and dirty; but in the Spring, the Ground being mellow, is easily to be wrought, and the Weeds are then but turned in, which both does good for the Inrichment of the Ground; and plucked up by the Roots before they have seeded, will spring again: and therefore, for the most part, we begin to plough about the midst of *March*; but sandy and light Grounds, they use to be ploughed in the midst of Winter, if the Season will suffer.

Pliny is of my Opinion, that stiff Ground then should be stirred.

A slender and level Ground, subject to Water, should be first ploughed in the end of *August*, and stirred again in *September*, and prepared for Sowing about the twelfth of *March*.

The light hilly Ground is not to be broken up in Summer, but about the middle of *September*: for if it be broken up before, being barren, and without Juyce, it may be burnt up with the Sun, and have no goodness remain in it.

Wet Ground, some would have to be broken up after the Ides, or beginning of *April*, which being ploughed that time, should be stirred about the tenth of *June*, and after again. But those that are skilful in Husbandry agree, that in the tenth of *June*, without great store of Rain, you shall not plough; for if the Year be wet, I know nothing to the contrary, but that you may plough in *July*. In the mean time be very careful, that you meddle not with Ground that is over wet.

CHAP.

CHAP. V.

Of Liming, Sanding, and Hacking Land, to make it fruitful.

THere are other Conſiderations relating to the well Ordering of Ground, than what I have already touch'd on, to clear and prepare them for Corn, Graſs, Pulſe, or other Things, uſeful and exceeding profitable:

If the Ground be barren, cold, or produces Weeds or Ruſhes, to help it, and bring it to a moderate Temper of Improvement for Fruitfulneſs, Lime is exceeding good. The Lime-ſtones may be got among Quarries of Stones, and in divers other places you may burn them in a Kiln, in the moſt convenient place you have, to ſave Charges of Carriage, and when you have before ſanded your Ground, and hacked it, make your Lime ſmall, and on every Acre beſtow between thirty and forty Buſhels of Lime, ſpreading and mixing it exceeding well with the Sand and Earth, and the ſtronger and ſharper the Lime is, the better the Earth will be, and the Improvement will anſwer your Coſt and Labour.

It matters not, of what Colour your Lime-ſtones are, whether of a pure White, or of a Grey, ſo they be ſharp and ſtrong in quality, to give a good Tincture to the Earth, it being the Strength and Goodneſs of the Lime, not the Beauty, that in this kind brings forth the Profit; and, indeed, it is a great Helper to Cold Grounds, eſpecially Clay, or Wet Grounds; and this is a great Preparer to laying Dung on theſe Lands, or any Soyl that is ſarning, either of Cattel, or ſuch as is caſt out of Ponds, Lakes, or muddy Ditches, for barren and hard Earth can never be overlaid with good Manure, or Compoſt, ſeeing the want of Warmth and Fatneſs which theſe produce, was before the occaſion of the Unfruitfulneſs.

As for the Hacking and Sanding mentioned, the firſt is, after the Ground has been turned up with the Plough, to go over it with a long Hoe, or Hack, and cut in pieces the Graſs that you ſee turned up in the Ridges, or Furrows, or any uneven Clumpers, that it may be dragged away, burnt, or carried together with the Weeds, not to grow up again to incumber the Corn, or Pulſe; and Sanding is to bring Loads of Sand, lay them in convenient places, as Heaps of Dung, and ſpread them lightly, or thick, as you ſee occaſion, over the Ground, that the Lime mixing with it, may the better Embody with the Mould, and Rain falling, be ſoaked in a good depth, to the heartning the Ground, and producing a good Crop to encourage the induſtrious Farmer.

CHAP. VI.

Of the Firſt and Second Ploughing, and of Harrowing.

AS to the firſt manner of Ploughing of Ground that is barren, for the Improvement of it, if it lie free from Water, as commonly all even barren Earths do, then throw down the Furrows flat, and between every of them leave a little Baulk, about half the breadth of the Furrow, and ſo go thorough and plough up the whole, without any regard to Difference or Diſtinction of Lands; but if there be danger of Annoyance of Water, lay the Furrows more near and high, dividing the Ground into ſeveral Lands, proportioning each of them to lie higheſt in the middle, that the Water deſcending may have free paſſage on either ſide; and when you have Hacked, Sanded, and Limed it, as before directed, come to your Second Ploughing.

In the Second Ploughing, penetrate the Ground deeper than at firſt, taking, as the Huſbandmen call it, a good Stitch, to raiſe up Earth at the Quick, which before was not

not ſtirred, make your Furrows deeper and greater, laying them cloſer and rounder together; and in this Order, or Latter Earing, be ſedulous to plough it as clean as may be, leaving no Baulks, or any Eſcapes; and as you plough, have thoſe that ſhall follow, to run it over with a Second Hacking; that is, with a heavy Share, Hoe, or Hack, to clear, or kill the Graſs and Weeds, as alſo to lay it level.

This done, take a Pair of ſtrong Iron-teethed Harrows, and go over the Ground, to open and tare that which was ploughed and hacked into ſmaller Particles, and raiſe the Mould lightly in greater abundance. Then take the beſt ſort of that Grain you think fit to Sowe in it, and ſcatter it according to the Art of good Huſbandry, ſuffering your Sprinkling to be a Medium, not too much nor too little.

The Seed being ſprinkled on the Ground, make your Second Harrowing to cover it cloſe and well, being careful to break all the Clots as near as poſſible, raiſing the Mould as fine and high as may be, that it may cover the Seed the deeper, and prevent the Rain waſhing it up, or the Birds, and other Vermine, from deſtroying it; for certain it is, that theſe cold, clayey, or barren Grounds, if not lightly raiſed, keep in and clog the Seed, which by reaſon of its roughneſs, cannot eaſily break through, or if it does, the Cold at the Roots, ſtarve the Spires, and they moſtly wither away, if not helped by Proper Means and Artful Labour.

As for Clotting the Earth, it is very proper in many Caſes; for when you have Sowed and Harrowed the Ground, if notwithſtanding ſome hard Clumpers remain, which will be in hard tough Earth ſubject to barrenneſs, which the Rain cannot diſſolve, ſo that the Grain in vain may labour to get through them, to crumble theſe then, take a Clotting-Beetle, made of ſound Wood, very hard, after the form of a Carpenter's Maller, but with a much longer Handle, and heavier Head, and with it go over the Ground in a dry Seaſon, and dath them to pieces, or to ſpread them the more, you may take a flat Board, much about two Inches in thickneſs, and a Foot broad, faſtned

to

to a ſtrong Handle, that on neceſſity you may uſe with the force of both your Hands, in the manner of a flat Shovel.

CHAP. VII.

Of Weeding and Deſtroying the Weeds, with Directions to Order the Corn in Sowing, &c.

WEeds are very offenſive and deſtructive to Corn, in hindering its Growth; and therefore having brought you to beſtow your Corn in barren Ground, it is but reaſonable I ſhould tell how to preſerve it, that it proſper to anſwer your Expectation:

When the Corn is ſprung up about a foot above the Ground, theſe ſorts of Soil, whoſe nature it is to produce Weeds, will require your Induſtry, and they muſt be taken out, if Thiſtles, or ſuch as are great and offenſive, with Hooks, or Nippers, by cutting them off cloſe by the Roots, or rather pulling them up by the Roots, if that, by breaking the Ground, will not drag up the Roots of the Corn with them. The Nipper may be made with two long Pieces of hard Wood, riveted, to be opened like a Pair of Pincers, with Saw-teeth, cloſing into one another, that they may take the ſurer and firmer hold without ſlipping; and theſe may be much hindred in their Growth, by Sowing about two Buſhels of Bay-Salt, to an Acre of Land, as you do your Wheat after the Grain is Sowed; which is alſo of ſo excellent a Nature in barren Lands, that it heats them to a degree, and makes what is Sowed, proſper and multiply manifold. As alſo will, Steeping your Grain in Sea-Water; or being at too great a diſtance, Brine, eſpecially ſo that you Sowe it preſently after.

As for the Sand, you ſand Ground withal, it muſt be Sea-Sand, if poſſible to be gotten; but if the Ground lie ſo Inland, that it cannot be done without vaſt Trouble and

Coſt

Coſt of Carriage, more than the Advantage may be ſuppoſed to recompenſe, dig up the ſalteſt, looſeſt Sand, or Earth you can light on, and make that ſupply its place; the Saltneſs may be known, by trying it in Water: for a Quantity being ſteeped there, if it make the Water brackiſh, you may be aſſured it is proper for your uſe; alſo Wood-Aſhes, Sea-coal-Aſhes, and Sutt, are extraordinary Manurers of Land, being ſcattered over them, or ploughed in, ſo that being wetted, they diffuſe their Quality of Heat, to temporize with the Coldneſs of the Earth, and cheriſh what is Sowed. But as for Rye, it muſt not be wetted, for among all Grain it grows beſt with the leaſt wet, and will, as the Country ſay, drown in the Hopper in a Rainy Day, yet where Salt, Aſhes, Sutt, or Sea Sand, have been ſprinkled and ploughed in, it will proſper very well on barren Ground ſo Manured; whereon you may Sowe Barley, Oats, Beans, Peas, Lupins, Fetches, *&c.*

As for Wheat, the wetter it's ſowed, the more firmly it ſticks in the Earth, takes Root and proſpers.

CHAP. VIII.

To Dreſs and Manure barren Ground, over-run with Goſs, Broom, Furs, Weeds, &c. relating to Ground dry and wet.

HAving given ſome Inſight into the Improvement of barren Ground, a thing exceeding neceſſary to be known in a great many parts of this Kingdom, I ſhall proceed in it to the other Particulars, and eſpecially to the Filling and Dreſſing rough and barren Clays, encumbred or over-run with Goſs, Broom, and ſuch-like things, of Nature's Product, which hinders Land, by keeping it lean and out of Heart, from being eaſily brought to produce any thing elſe.

Now

Now I muſt ſuppoſe theſe kinds of Clayey Ground, whether ſimple or mixed, to lie a little lower than thoſe before diſcourſed on, not ſo ſubject to heat, to burn up what grows on them in the ſcorching Summer, nor to nipping Froſts, to wither and blaſt in the Extremities of Winter; yet theſe Grounds, as they are, will neither properly bear Corn nor Graſs. There is another ſort of Ground, not differing in barrenneſs to this, *viz.* ſuch as are infected with noyſome Weeds, which cauſe Diſeaſes in the Cattel feeding there, as likewiſe thick and overgrown with Broom; for altho' theſe for Fuel, Thatching, or Covering of Out-Houſes, *&c.* may be ſome advantage to the Huſbandman, it makes nothing near a Recompence for the loſs of ſo much Ground, as may be turned by a little Coſt and Labour to good Improvement.

To deſtroy theſe Incumbrances, cut them as near as poſſible may be, to the Ground, then make them up in Bundles as big as Bavins, dry them firſt in the Sun, and then carry them home, and Stack them in a place where the Wet cannot fall upon them: for if it do, it will ſoon rot them; then ſtub up all the Roots you can find in the Ground, and lay them in little heaps to dry, after which they will become good Fuel; or burnt upon the Land, and the Aſhes ſcattered, will much ſtrengthen it, when ſoaked in by the Rain, or ploughed in the proper time; for this is about the latter end of *April*, and beginning of *May*.

Thus having thoroughly cleared the Ground, take the Refuſe, with ſome Roots well dried, and pile them hollow, pare up Roots of Graſs and Earth, and pile on them, leaving only a Vent, and then give Fire with Straw or Stubble, and the Earth keeping in the Smoak, and receiving it, will, as it were, burn with the Roots, and receive the Fatneſs, and be very mellow. This, in ſome Countries, is called burning of Bail; and when it is well burnt and cooled, with Shovels and Beetles break and diſperſe it over the Land, and it will be a very good Dung, or Manure; then with a very long Plough, breaking up the Ground, and by broad deep Furrows, lay it into Lands as large as you think the Nature of it will bear, higher or flatter,

flatter, according to the like conveniency, as it lies more or leſs ſubject to the Water, or overflowing of Neighbouring Brooks, Rivers, or great Ditches, or Waters occaſioned from Showers deſcending from Hills, or higher Grounds: for theſe Inundations greatly hinder Fruitfulneſs, by chilling, or rotting the Corn, or other Grain, in the Ground, when ſowed; ſo that if it ſpring up, it comes to no advantage.

But firſt of thoſe Grounds that lie not within the Danger of Overflowings, by reaſon of their height, and ſo of the reſt in their Order. But to the purpoſe: The Ball burnt, caſt abroad, and the Land broke up, then, if you can come by it, Salt it with Sea-Sand, after Lime it, as has been directed; or for want of Sea-Sand, ſcatter as you do Grain, Bay-Salt, mixed with other Sand; or fine ſa Earth, well ſifted from Stones and Rubbiſh. Then Manure it with ſuch Dung as you have that may be proper to it, to give it a fertilizing Heat, as that of the Horſe, Ox, or Kine, rotten Straw, Mud out of Ditches or Ponds, that is fat and ſlimy, the Sweepings of the Houſe, Flowers, Mills, Barns, Yards, where Cattle trample much; and if you be near the Sea, there is an excellent Weed, called *Hemp-weed*, bearing broad Leaves, black, with great Heads, and twiſted like Peas-ſtraw, growing in great abundance among the Sea-Sedge, on many Coaſts; with this, when gotten, you may ſtrew over your Ground already plough-ed, and plough it in with the reſt of the Manure, and by rotting there, it will add heat and ſtrength to the Land. Let this Ploughing be deeper than the firſt, with larger Furrows, that the new quick Earth ſo raiſed up, may mingle with the Manures Hack, and Harrow it again: then take Pidgeons, and Land-Poultries Dung, (for that of Water-Fowl is naught) and ſprinkle over it, allowing, if you have it, two or three Buſhels to an Acree, ſcattering it in as equal a proportion as you can, then ſowe your Wheat, or other Corn; and for this ſort of Ground, at firſt Wheat is the moſt thriving, though it will bear other ſorts of Grain, and with care, of a very barren and uſeleſs Ground, become uſeful and very advantagious to the Owner; it muſt likewiſe be clotted and ſlated; and if you

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want Salt-Sand, or Salt, ſteep your Wheat in Brine of any Salt, and it will produce a good Crop.

You muſt take care to Weed it, and gather the Stones before, that will obſtruct the Corn from riſing, and carry them into the Roads, or dry Ditches, or ſome Pit proper for them; for theſe Grounds are generally great Producers of Stones.

If Weeds, which commonly breed in wet barren Grounds, grow up to the hindrance of Seedling it, or that you would be at the Labour and Coſt to bring it to fruitful Arable Ground, pluck them all up with your Hands, or Nippers of Wood, with Saw-teeth ſhooting one into another, to hold them the faſter; lay them on heaps, dry them, and burn them, then ſcatter the Aſhes on the Land, as before directed. Plough the Ground, but not ſo deep as the firſt, yet turn up the Furrows as deep as poſſible you can; and if it lie ſubject to Overflowings, make croſs Furrows and Drains into Ditches or Rivers, or low places, that the Water may deſcend, and be carried off as much as may be; if there be no Current, make a Pond at the lower end of it, which may receive the Water; but this will do but little, if it be much ſubject to Water-flowings, or Mariſh Springs, and therefore if you would uſe it for Corn-Land, you muſt find a way to carry off the Water, or it will not avail your Labour and Coſt in Manuring; Directions for which I ſhall have occaſion to Treat of hereafter at large. As for the Manuring, it muſt be as the former, and ſo all the Particulars in Management, only you muſt at the Second Ploughing do it very deep, to hollow the Ground, that the Water may the better ſoak away, and lay the Lands in Ridges as high as you can, and the Furrows as deep.

CHAP.

CHAP. IX.

To Improve Barren Clay, Simple, or Compound, over-run with Whinnes, with the particular Ordering of it.

THere is another barren Clay, no matter which, either Simple or Compound, that is peſtered and over-run with Whinnes, a ſhort buſhy, knotty, prickly thing, not growing above a handful from the Ground, yet entangling in one another, and ſpreading ſo faſt, that they choak the Graſs, and obſtruct the Cattel from feeding, and the Graſs kept thus down, will moſtly die, and a moſſy Scurf cover the Surface of the Earth: yet for this dangerous Incumberance there is a Remedy, and this Ground I ſhall inſtruct the honeſt Farmer, how to bring to bear a good Crop:

To begin this Work, worthy your Coſt and Labour, take a fine thin Paring-ſhovel, made of good tough Iron, and well ſteeled and hardned round about the Edge, and with it pare up the upper Swarth of the Ground, about an Inch and a half, or two Inches deep, turn up every Paring about three Foot in length, and as broad as the Shovel will conveniently do it, turn the Whinne, or Graſſy ſide downward, and let it lie in the Sun two or three days to dry. *May*, for this Undertaking, is the proper Month, and being well dried on the Earthy ſide, turn it, and let that well dry, then gather it into heaps, and twiſt it as it were into Bands, or Cords, and lay it up round and hollow, that fire being put under the hollowneſs, may eaſily come at it to conſume it, thruſting in to the great Cavity, which muſt be like an Oven, but much leſs combuſtible dry Matter for that purpoſe.

When theſe heaps are burnt, break them as Bail with Shovels and Beetles, ſo that the Earth may mix with the Aſhes, then ſpread them on the Ground to an equal thickneſs,

neſs, whilſt they are hot and glowing, which will heat the Earth, and deſtroy the Fibres of the Roots that remain either of the Whinnes, or Weeds.

This being done, plough up the Ground in good long Furrows, hack it ſmall with Hacking-Hoes, Manure it, and further order in all Particulars, as in the foregoing Directions for Goſs, Furs, *&c.* Let the laſt Ploughing be very deep, eſpecially your Furrows, and let your Harrows have Weights on them, to preſs the harder on the Ground, and turn up the remaining Roots of the Whinnes, which being dragged off dry, and burnt as the former, ſcattering the Aſhes on the Land; and if the Harrow will not carry them to the Lands end, have ſome Boys or Girls to follow the Motion of it, and pick them up as they ſcatter, laying them on heaps in the Furrows, and when dry, bring them on the Ridges of the Land, and burn them; then ſowe your Corn mixed with Salt and Wood-aſhes; and this Ground thus prepared will bear good Wheat in abundance, in the ſpace of two or three Years, then ſowe Barley and Peaſe, and Beans a Year after the Oats; and laſtly, it will be very good Meadow-Ground, or Paſture, for the ſpace of three or four Years after, and then you muſt manure it again with a ſufficient quantity of Soyl, and it will continue good Ground.

CHAP. X.

To Dreſs and Manure all Barren Clays, Simple or Compound, Incumbred or Overgrown with Heath or Ling.

TO bring this ſort of Ground to bear tolerable Corn, or Graſs, far exceeding the Charge, and what it would other ways do without it, you muſt with Scitches, or ſharp Hooks, but old Scythes are the beſt; cut down all the Heath, or Ling, as cloſe as you can, about the beginning of *May*, and let it lie on the Ground to dry, then

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ſpread it over the Ground, and ſcatter dry Straw on it, and by ſetting it on Fire at the ſeveral Corners of the Field, in a moderate breathing Air, the Fires will encroach to one another, and meet in the Center, ſo ſcorching the Ground, it will kill the Weeds and Roots in a great meaſure, and the Aſhes manure the Ground, then with a ſtrong Plough, having broad Wings, Share, and an even Coulter, laying the Lands large, and the Furrows deep, not as yet troubling your ſelves to pick out the quick Roots, but let them lie in the Furrows, yet hack the Ground over, as has been often directed; and in this caſe, with your Hacks and Paring-ſhovels, when the Ground is dried, pare the Furrows, and where you ſee many Fibres of Roots, and lay the Parings to dry, then place them in little heaps near each other, in Rows, that ſo being hollowed up, and dried Heath put under them, they may burn Earth and all, which being full of Strings and Roots, will do ſo even to Aſhes; and this being ſpread, is exceeding profitable for the Ground, and being ploughed in at the Second Ploughing, it kills the remaining Roots both of the Heath or Ling, and Weeds, if the Ground produce any, having Dunged, Limed, and Samled it before.

When the Ground is thus Made and Manured, and the Wheat-Seed-time draws on, at the latter end of *September*, or beginning of *October*, plough very deep at the Second Ploughing, even more than ever, ſo that there may be nothing of the firſt Furrows remaining, but the Aſhes that are turned up, which being covered with Sand, Lime, or Manure, the Earth will lie very plain and level, ſo that there is a neceſſity of raiſing up new Furrows, and of new Hacking and Harrowing, which rendring the Earth light, and a well mixing of all together, ſo that it may be capable of bearing very good Wheat, eſpecially if Sheep have been Folded on it before, and Dunged well, which together with the Dung of Poultry, is an excellent Manure.

As for the Weeding and Cleanſing the Ground when the Corn is ſprung up, you muſt take great diligence; for though in this kind of Soyl, Cockle, Darnel, and ſuch Thiſtles,

Thiſtle grow not, yet hard and rough Weeds will ſpring up, of the worſt kind; as, Twitchberries growing at both ends, Ling, Wild-Time, &c. pull theſe up by the Roots with your Nippers, as ſoon as they are pretty well peeped out of the Ground, ſo as to be diſcerned and layed faſt hold on; for if they grow up to any height and bigneſs, in pulling them up much of the Roots of the Grain that grows about them will alſo come with them. As for other tender Weeds, if there be any, you may cut them off with your Hook; and if fine ſoft Graſs grow up, you need not meddle with it, for it will keep the Corn warm, and nouriſh the Roots of it.

Now for the Profit of the Ground thus ordered: It is proper to bear Wheat plentifully for the three firſt Years, and the fourth good Barley, with the help of Sheep being folded on it, or a Manure of Poultrey or Pigeon's Dung; and for three Years after very good Oats, and ſmall Peaſe the eight Year. As for Beans, this Soil will hardly bear them at all; and to the eleventh Year it will prove good Meadow Land, though the Graſs will be ſomewhat coarſe, yet good wholſom feeding Graſs as can be reaſonably expected; nay, it will likewiſe fatten Cattel; tho' in this latter, a longer time is required than when they are put into finer Graſs, where the Ground is mellow, and of a good natural Soil.

CHAP. XI.

Of Dreſſing, Ordering, Tilling, and Manuring Barren Sandy Ground, producing only ſhort Moſſie Graſs.

HAving diſcourſed, as I hope, to the Reader's Satisfaction, concerning barren Clay-Grounds; the next thing, as I conceive, to be treated of in a regular Method, is the Improvement of barren ſandy Ground, a great deal of that kind, as well as the others, lying at this day waſt in *England*, *Scotland*, and *Ireland*.

This kind of Ground is uſually ſimple, without mixture; and though the Colours of the Sands may change, they are moſtly the ſame, and very little to be diſtinguiſhed in their Quality. There is a naughty barren cold Sand, lying on high, rocky, or ſtony places; or upon bleak Plains, expoſed to the North and North-Eaſt Winds; or bordering on the Sea, bringing forth nothing but an unprofitable ſhort moſſie Graſs, made bitter by the Sun; and when the cold Dews fall, it is of an unſavoury taſte.

Now to improve this Ground to much Advantage; in the Advance of the Spring, with a ſtrong Plough anſwerable to the Soil, yet ſomewhat leſs in the Iron-work and Timber than is neceſſary for Clay Ground; Plough it up of an indifferent Depth, yet not ſo deep as the Clay; lay your Furrows flat and cloſe to one another, ploughing it very clean, and leaving no Baulks; but not ſo cloſe but you may lay the green Swarth to the quick or new ploughed Earth; or rather, turn one Swarth againſt another, ſo that the Furrows may lie, and only but touch the Edges one of another: When this is done, hack it into ſeveral pieces, and let it lie for many Days in the Furrows, that the green Swarths heating one another may rot, which you may perceive they are about to do when they grow black. Though theſe ſandy Grounds being eaſily crumbled, require not the Labour of the former; and therefore the main of the Hacking in this caſe is to cut the Swarth that it may rot; and it is only required in barren Sands, which have ſome toughneſs in them, and not in thoſe that are very looſe and fruitful.

When you have thus ordered your Ground, there is a way to be uſed contrary to the former, which is to Marle it. And now becauſe this is a very hard Term to ſome and not every-where in uſe, becauſe not to be had, I ſhall declare what *Marle* is, before I proceed further:

This Marl is a certain rich ſtiff Clay, an Enemy to Weeds that ſpring up of themſelves; and gives generative Virtue to all Seeds that are ſown in the Ground. It is of a glewy Subſtance, and not fat or oily, as ſome ſuppoſe it: It is in Quality cold and dry, and was Earth

fore it came to be Marle; and being made Marle, it is no more but a Clay Ground: As for this, when it is a little hardned, it is only dissolved by Frosts; and this is the Reason it always worketh better Effects the second Year than the first.

As for the Colours of the Marle, they are different; as, a White, a Russet, a Grey, a Yellow, and a Black, and some other Colours, yet all these may be reconciled; for the Colours may alter according to the strength of the Sun, and the Climate they are produced under.

This is so good a Manure, that well layed on it will enrich the barreheſt of the Grounds for Ten Years, and some for Thirty. To find it, take an Auger-Wimble, made to hold many Bits, one longer than another, so wring them into the Ground, till you have tryed, by drawing the Earth in one place, then proceed in the most likely places, till you come to the Marle: And the most proper places to make this Essay is, in the loweſt part of high Countries, near Brooks and Lakes; and in the high parts of Low Countries, upon the Knowls of little Hills, and in the Clefts of steep Banks, or Breaches in Hills, opening of themselves; in some places it lies deep, in some again shallow; and commonly these barren sandy Grounds are verged with it lying very deep.

Having found it, dig it up in great Lumps, and bring it to your Land with what speed you can; lay it on Heaps a yard Distance one from another, and when it is dried, spread all the Heaps, and mix the Marle with the Sand; and observe, if the Land ascend upon a Hill, to lay twice as much on the upper part as on the lower, because the Rain washing it, will carry the strength downward, so that it will fatten the Earth as it goes: And where Marle is wanting, Fullers Earth is an excellent Soil to supply the place of it; beat these with a Beetle, or Maul, as small as you can; and for this sort of barren Land, though in Clay it is nought, you may use Chalk or Lime stones, which much comfort it, strengthen and knit the Ground together. And having thus done, when Seed-time comes, plough it again deep, that the new-broke-up Earth may mix with the old, and lime it a little; for the Nature

of the Ground requires not ſo much of that as the Clay Ground.

This Ground will bear Wheat well, but is moſt attributed to Rye, which will grow on it in abundance. If you ſow Wheat, ſteep it in Salt-Water; and for the other, mix a little Bay-Salt with it when you ſow it. The Weeds this kind of Ground is moſt ſubject to, are Wild Harbottles, Cheſsbelcs, Gipſie-Flowers, and the like, which may be taken out by drawing up the Roots, or cutting off the Stalks cloſe by the Ground.

The Ground thus ordered will bear Wheat or Rye three Years, and after that Barley with once ploughing, the fifth Year Oats, the ſixth and ſeventh excellent Lupines, and then it will be good Paſture three or four years, after which you muſt dreſs it as before, to recover its Heart and Strength.

CHAP. XII.

Of Ordering and Dreſſing Barren Sand over-run with Heath, Fearn, Braken; and the Nature of the Soil, &c.

THis ſort of Ground is more dry, looſe, and hard than the former; and to bring it to Fertility, mow down the incumbring Weeds as cloſe as may be; and note, if they be high, it ſhews the Ground of ſome ſtrength; but if low, weak and out of heart: Lay them thin, and turn the Weeds you mow down, that they may dry; and when they ruſtle, that you may crumble them, bring your Plough, and turn up your Furrow, that may lie flat to the Ground one green Swarth against another; then obſerve how broad your Furrow ſo turned up is, or the Ground ſo covered, and leave ſo much Space unploughed between Furrow and Furrow, ſo that there may be a green Baulk and a Furrow: And having gone over the Land in this manner, take a Par-

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Shovel, and pare up the Furrows about two Inches thick, in pieces of three Foot in length; make them in little hollow Hills, about a Yard and a half distance one from another, till they are dried well in the Sun or Wind, and placing the Earthy part upwards, put dried Fern under them, and set them on fire; when that is done, and the Earthy part sufficiently parched, hack over the Furrows that are turned up, then beat and spread the Ashes and burnt Clumpers over the Ground, mixing it well with the Mould, then Marle it plentifully; which done, plough it over again very well, leaving nothing unturned up; and then the fresh Ground mixing with the rest, will augment to the strength of the Soil; and this Ploughing should properly be about the latter end of *June*.

The Ground thus dressed, Lime it a little; and this liming will much abate the growth of Weeds, or any other Incumbrance, its acute quality deading the Roots; and above all, is a great Enemy to Thistles, which Fern Ground naturally alters into: After this, it requires a third ploughing very deep, and harrow it well; but my Advice is not for sowing Wheat on this sort of Ground, it not being proper for it, unless a little on the best part of it for the Supply of your Family, because it has not much more Strength than the Manure allows it; but it will bear excellent Rye the first three Years, and the fourth Barley; and three Years after tolerable good Oats; the eighth Year you may sow Fetches or Lupins; and for three Years after it will be tolerable good Grass, with a little Manure of Dung or slimy fat Casting of Ditches or Ponds. You must after sowing harrow it well, and close it; for though it is Sand, the Marle and Lime will make it cling hard together.

The Weeds that after this are most likely to spring up with the Corn, are, Fern and Thistle, where the Lime had not strength to settle and destroy them. As soon as they appear, pull them up, and lay them on Heaps to rot and make Dung.

CHAP. XIII.

Of Ordering and Enriching Barren Lands, ſubject to Wild Briars, Twitches, and Buſhes, &c.

THeſe Lands remaining in their Nature unprofitable, Art and Induſtry are required to render them advantagious to the Owners; and in the firſt place, cut up theſe Shrubs, or Under-woods, as cloſe to the Ground as may be; then ſtub up the Roots very clean, and they will in a manner recompenſe the Labour, in ſerving for Fewel, or mending Hedges; then with a pair of ſtrong Harrows go over the Ground, and laying Weights on them, to preſs the harder on the Surface, tare up the Twitch-Briars that have eſcaped your ſight, as alſo the rough Graſs, till the bare Earth appear, unlading the Harrows as they are cloyed, and laying the Refuſe up in Heaps on the ſides of the Ground to dry; and then bring them on the Ground and burn them, ſpread the Aſhes, and plough them in, leaving no part of the Aſhes untouched with your Plough; hack it ſmall, and let it be run over by Children, or others, at a ſmall rate, to gather up all the remaining Fibres or Roots that appear above ground; burn them alſo, and ſcatter the Aſhes on the Land.

To manure this ſort of Ground: The beſt Manure, Experience approves of, is Horſe or Ox-dung, Straw rotted in Stables or Cow-houſes, with the Scowring of the Yard where Sinks come, and Cattel or Poultrey trample, and likewiſe the ſcowring of muddy Ditches, Ponds, Brooks, Lakes, where there is fat Slime, which is known by Willows growing and thriving about them; ming'e t is with the firſt Manure, then harrow it even and ſow it; after that harrow it again well, and it will produce exceeding rich Maſlin, or Mixture of one part Wheat and two of Rye; for then the Crop will be

more certain, and thrive the better, and this will hold for three Years; then ſow Barley, after that Oats, and ſo go on, as in the precedent Chapter.

As for Weeding, you muſt do it as ſoon as you perceive the Weeds ſprout up, pulling them up by the Roots, or they will be ſubject to grow again.

CHAP. XIV.

Of Ordering, Tilling, and Enriching Barren Lands, encumbred with Moors, or Mooriſh Long Graſs, &c.

AS for this kind of Barren Sand, it is the worſt, being mooriſh, blackiſh, with an ill Sent, bearing ſtinking long Graſs, or Moſs and Graſs together, which no Beaſt, though hungry and hard fed, will meddle withall; and theſe kind of Grounds are commonly full of Moors, and Boggy Wetneſs, in ſome places growing Moſs and Graſs, in others Ruſhes; which laſt is the beſt kind of Ground to manure, and are generally extreamly moiſt and cold; and therefore when you enter upon manuring it, it muſt be drained, by making Gutters into Ditches, Brooks, or ſome Neighbouring River, with Sluces to let out the Water that is in, and keep out the Overflowings; which I ſhall more amply ſpeak of, when I come to treat of Draining Fenns and Marſhes, Boggy Grounds, *&c.*

The Land being brought to a conſiderable Dryneſs, plough it up with a very ſtrong Plough that may go very deep, laying before the Plough Reeds of Fetches, Peaſe-ſtraw, or that of Lupins; turn the Furrows of Earth upon the Weeds, that they may be bruiſed under the Mold; and ſo order every Furrow, or moſt of them, and give the Earth time to rot the Straw; and if Rain fall not to rot it, ſtop the Sluce, that the Springs may overflow it,

and then preſently drain off again; then hack the Ground into ſmall pieces, ſtrow Lime upon it, and other Manure; and if you have any ſalt Sea-ſand, ſprinkle it likewiſe over it; then marle it, and lay on a ſmall quantity of Chalk; and about the latter end of *June* make the ſecond ploughing deeper than the firſt, that if any of the Straw remains unrotted, it may by the new acquirement of moiſt Earth the more ſpeedily putrifie, break the Clots, and lay the Land even, without Clumpers or Weeds, or other Annoyance, and let it ſo continue till *October*; then plough it the third time, hack it, and ſow it with the beſt Seed-Wheat; and though in itſelf it is the worſt of Ground, yet by the help of the Soil and Compoſt, with the Werneſs that you may let in at pleaſure, it will produce good Wheat for three Years, then ſow it with Barley the next Year, helping it a little by Folding Sheep on it, and for two Years after it will bear Rye, and till nine Years Oats and Peaſe; then for three Years following it will be good Meadow and Paſture; after which time it muſt be dreſſed, and put in Heart, as before. As for the Incumbrance, the Corn will be ſubject to, it will be ſmall Reed and Sedg, which you may weed out as ſoon as you ſee them well appear, either pulling them up with your wooden Nippers, or cutting them cloſe with your Weed-hook, and they will not grow again.

CHAP. XV.

A Way in General to Enrich any poor Sand or Clay for Grain, with leſs Trouble and Coſt than before.

THere are divers things that ſome, through Ignorance, regard not, that are very profitable for the manuring and enriching of Land, as Woollen Rags; and of theſe a Sack-full and a half is ſufficient for dreſſing an Acre of Arable-Ground, being ground or chopped very ſmall

ſmall, and ſpread an equal thickneſs over the Land before Fallowing-time; and then coming to fallow, let the Plough take them carefully into the Ground, and cover them; after this uſe Stirring, Soiling, Ridging, according to the Rule of good Huſbandry in their proper Seaſons.

When you come to Sow the Land thus ordered, to make the Seed proſper the better, ſteep it in thick ſlimy Water that drains from Dunghils; and if no ſuch be to be had near-hand, ſteep Cow-dung in Water, and ſoak the Seed in it. Wheat will be well ſoaked in 18 Hours, Barley in 36, Peaſe in 12; Rye and Oats may be ſowed dry, for they receive more Hurt than Advantage by wet; cover and order it as has been directed in other Caſes, and fear not an extraordinary Encreaſe.

The Shavings or Waſts of Horn, or the Hoofs of Beaſts, are extraordinary good to dreſs Land withal; ſcatter the Shaving to the like quantity as the Rags, and plough them in after the ſame manner; and theſe Manures will give a good Heart to the Ground for the ſpace of five Years without any renewing.

The Hoofs of Cattle are approved for this, and may be got of Trotter-men and Tripe-men, *&c.* and theſe muſt be ſliced, or cut ſmall, and ſtrewed on the Land as the Rags. Soap-aſhes, when the Lye has been drained from them, is of excellent uſe to ſtrengthen Land; beſide the Advantage it has of killing Weeds and Inſects that breed in the Ground, and eat up the Corn, being dried, beaten, and lightly ſcattered over.

The Hair of Beaſts enriches Land, being ſtrewed and ploughed in, and there let lie to rot. Alſo Mault-duſt is much available, or the Excrements of Mault, allowing three Quarters of it to an Acre; and to enrich your Dung on the Lay-ſtall, is to throw often Beef-broth and other waſt Broths upon it, as alſo Soap-ſuds; and in ſo doing one Load will be worth three of the ſame kind that is not ſo uſed: If you continue it long, the Blood and Garbage of Creatures much fatten Dung, and makes it of excellent uſe; and ſo does the Dregs of Oil, or the Preſſings or Graves of the Whale, or any other Sea-fiſh:

So that by what I have directed much greater Improvement might be made than is at preſent.

If you would enrich Barren Woody Land newly ſtubbed for Encreaſe of Corn, take the Underwoods or Sprays, place them in a great hollow Heap, and cover them with the Turfs or Swarths you pare up, Earth and all; then put Fire to the Wood till all be well burnt, break the Earth, and ſpread it over the Ground, mingled with the Aſhes of the Wood; ſpread it a ſecond time with the Aſhes of Fern, Stubble, Straw, or the like, and letting it reſt a while, plough it, and ſoil it at the beginning of *October*; and plouging it a ſecond time, ſow it with Rye the firſt Crop, and it will bear it very plentifully; the next may be Wheat, the third Barley, the fourth Lupins, or any other Pulſe, and then proceed to ſow it with Wheat again, and this Land will laſt in good Heart for eight or nine Years, and longer, where there is any natural Fertility in the Soil, as has to good advantage been experienced in many woody parts of *England*

CHAP. XVI.

To reduce Grounds to Fertility that have been ſpoiled by Salt-Water, or Overflowing of Sea-Breaches.

THis is a very difficult Point; for though Salt-water or Salt-ſand moderately uſed on Ground, gives it Heat and Vigour, yet Exceſs imbitters and utterly waſts the Strength of it, eating and ſpoiling the Roots of Grain Trees, or any thing of natural Growth; and therefore the Salt-water being drawn off, and ſtayed from any more flowing in, the Ground by lying low is capable of having freſh Water brought upon it from higher places, which lying ſometime, will take out the Saltneſs of the Earth the other left behind it to a great degree; it need not exceed above four or ſix Inches on the Sur-

face, if the Land be level; let it lie two or three days, and then by the help of Ditches or Sluces drain it away, or by the help of Engins, which I shall have particular occasion to speak of, it may be thrown off into convenient places; as, over the Banks into the Sea, if it be near; or on other waste Ground, where it may dry up; and between whiles flow it often, till the fresh Water has in a great measure taken the Saltness out of the Earth.

The Ground being drained and pretty dry, about the latter end of *March* plough it up as deep as well you can, turn up a large Furrow, and laying it into Lands, raise them up as much as you can, lay them round, and observe if they be simple or mixed; if it be Sand, whether red or brown; then take such clear Earth as is free from the Washings of the Salt Water, being of a small and mean Stiffness and Richness, digged out of some Pits or Banks where the least Miss or Spoil may be made; lay it in little Heaps, and spread it over the Land; and when dry, clot it, and break it as finely as possible; and this Earth will suck and draw the Salt into it, taking off much of the evil quality in the sandy Ground, and also stiffning the Sand, makes it apt for Fruitfulness.

If this Ground damaged by Salt Water be rough, hard, gravelly Earth, then spread in like manner the best and richest Clay that can be had, or for want of that blue Marle, which will not only suck up the Saltness, but cool and much refresh the Ground, adding new Nourishment, whereby the Seed that is cast in will be fed and nourished. But if the spoiled Earth be a tough stiff Clay, though seldom found so near the Overflowings of Salt Water, cover it over with the finest fresh Sand, which will separate the Sand from the Clay, and take away the naughty Stiffness of it, that will otherwise oppose the rising of the tender Sprouts; it will also give a gentle Warmth, and abate the Coldness of the Clay, and make it bring forth plentifully.

If it be a mixed Earth, observe whether it be binding or loose; if the former, Sand it as before; if the latter, spread it with the richest Clay you can get: When you have thus ordered your Land, plough it a second time before

before Midſummer, ſo that the new-layed Earth may be well-mixed with the old; then take the Mud of dried bottoms of Lakes, Ponds, or Ditches, of Waters that were freſh, or Woollen Rags chopped ſmall, or with both together; cover it over lightly, then immediately plough it Land after Land, leſt by long lying the Sun attracts the ſtrength out of the Manure; then let it reſt till *Michaelmas*, and ſo give it the laſt ploughing, and ſow it with the hardeſt and largeſt Wheat; and for this Land, that which is called the *White Pollard* is the beſt; and if the Salt Water be kept out, you will have a very good Crop; the ſecond Year ſow it with very good Hemp-ſeed, and it will prove very gainful; the next Year lay it flat for Oats, and then lay it down, and it will prove good Meadow or Paſture: However, the firſt Year after laying down let Sheep graze on it, whoſe cropping it and Dung will fertilize it, and then you may uſe it as you pleaſe; either keep it for Grazing, (for it will produce extraordinary good Graſs) or for Meadow; and in a few Years you may plough it again to produce good Corn, eſpecially Wheat; for by this time the Saltneſs is very much taken out of it. And thus you may reduce all ſorts of Ground overflowed by Salt Water, where there are no Salt Water Springs to ſeed and float it; for if there be, and they cannot be drained, turned away, or otherwiſe remedied, your Labour is loſt. Where freſh Water cannot be brought on theſe Grounds to float them, add to your former Manure Mooriſh Earth, the Soil of Streets and High-ways, the Earth dug up where Dunghils have lain a conſiderable time, Rubbiſh and Sweepings of the Houſe, Barns or Yard; and having ſpread them on the Land, take a large Hawthorn-buſh, rough and prickly, plaſh other Buſhes and faſten to it. To make it lie flat and preſſing on the Ground, tye on the upper part of it wooden Rowlers, and lay other Weights on it to faſten it to the Horſes Drawing-geer by the Stem or great Stalk, and draw it over the Ground in the nature of a Harrow, to break all the Clumpers, and lay the Earth very ſmooth after every ploughing; then ſprinkle Soap-Aſhes moderately on it, and it will loſe its Saltneſs in a little time,

and

and become good producing Ground, either of Corn, Meadow, or Paſture.

CHAP. XVII.

Good Paſture and Meadow to be made of Barren Soil, of any ſort of Earth, ſimple or mixed.

WAys of enriching the Earth are two-fold, *viz.* By Water and Manure; and for this uſe the lower the Ground lies, ſo it be ſubject to Overflowings or much Wet, it is the better, and is ſooner made good, and brought to Profit. Then conſider what ſort of Graſs it naturally produces, whether clean and entire, or mixed with that of worſer growth; and of theſe the firſt is moſt promiſing; and if the Growth be intermixed with Thiſtle, Broom, or the like, or burthened with offenſive Weeds; grub and pluck them up by the Roots, clearing the Ground of them as well as you can; dry them, mix them with Straw, and burn them upon the Swarth of the Ground, and ſpread the Aſhes; then fold your Sheep upon the Ground for ſeveral Nights, that their Dung may ſtrengthen it, and their Feet trample up the Graſs; then ſcatter it over with good Hay-Seeds, and go over them with a Rowler, or beat them with a flat Shovel, that they may be the better preſſed into the Ground to take Root; then over theſe ſcatter Hay, or the Rotting of Hay under the Stacks, or the Sweepings of the Barn, or moiſt Bottoms of any Hay that has been good, and is moiſt, and of no other uſe; then ſpread on your Manure as Horſe-dung, Man's Ordure, or the Dung of any Beaſt; and being thinned, and the Clots well broken, let it lie till the new Graſs ſprings through it; and the firſt Year do not graze it, leſt, not having taken very good Root, the Cattel tread it up, but mow it while it come to Perfection: And although the firſt Year it may prove ſhort and coarſe, yet the ſecond it will be fine and very

very long, and in great Plenty; and once in twenty, or more, Years Dreſſing, will continue it for good Meadow or Paſture, if in dry Seaſons you have Water to relieve it, which may be gathered by bringing Springs, or the violent Fallings of Rains, into a Ditch, on the other ſide of it; or by any other Conveniency, according to the Situation of the Ground on the aſcending part, to overflow it ſo long, that it ſoak deeper than the Roots of the Graſs, to continue Moiſture for the Nouriſhment of it a conſiderable time.

The beſt Seaſon in general for watering Meadows, is from the beginning of *November* to the end of *April*; and the muddier or more troubled the Water is, the better; for then it brings a Soil upon the Ground, and this is properly after haſty Showers, and great Fluxes of Rain; and you may make a Conveniency, if you have many Fields lying together, eſpecially in a Deſcent, to pen up the Water in one till very well ſoaked, and then by a Sluce or breaking down of a Dam let it into the next, and ſo by a ſmall addition of Water tranſmit it to many. This may be done likewiſe after Mowing in drowthy Weather; or if you Graze the Land, it may be done at any convenient time.

CHAP. XVIII.

Several Uſeful Engins deſcribed for the Watering of Meadow, Paſture, &c.

THere is great Advantage to be found in watering of Lands on ſeveral occaſions, as the Nature of them, or the Climate they lie in, requires; but then there is ſome Difficulty in doing it, where the Conveniency of Rivers and Land-floods are wanting, and without the help of Engins, many times exceeding Toil and Labour is required; which induces me to deſcribe ſome of the moſt material. And firſt,

The

The *Perſian Wheel*, ſo named from its Uſe, and the great Advantage it brings to the Kingdom of *Perſia* on this occaſion. This Wheel is made after the manner of an Underſhot Mill, *viz.* with a double Ring, into which two Pins paſs, and on them the Floats are faſtned, which Floats are to be hollow, and the half moſt remote from the Wheel holds the Water taken in at the open place about the middle of the back of the Float; and as the Wheel turns, ſo the Water is raiſed by degrees, and tends towards the part of the Float that is next to the Wheel; and as it ſurmounts the Receiver, the Water empties into it, one Float ſucceeding the other; ſo that at one turning round of the Wheel 30 Gallons of Water may be delivered. This Wheel ought to be about 15 Foot Diameter, and the Floats at 18 Inches diſtance, and ſo it will deliver the Water at about 10, 11, or 12 Foot above the Stream it takes it from, and may be carried four times round in a Minute; ſo that in one Hour it will diſtribute about 120 Hogſheads of Water, with 12 or 18 Inches penning or ſtopping; but an ordinary Current of Water, will very well water about 30 or 40 Acres of Land, according as it may lie diſpoſed to receive as to Level or Deſcent.

When you do this, conſider the Nature of your Land: If it be a cold Clay, too much Water injures it; if light, warm, or ſandy, then a little Water greatly refreſhes it. It is alſo to be obſerved, that this Motion well ſet a going is conſtant, and will laſt ſome Years with little Charge of Repairing; and the ſlower it moves, the better it delivers the Water, and a ſmall Stream will carry it. It may alſo be uſed in Draining of Lands, if a Current can be made to carry the Wheel about; and as the Land lies higher or lower, ſo leſſer or greater Wheels may be uſed; and they will exceedingly ſuperabound the Charge and Trouble, by making of Graſs grow in great Plenty, where otherwiſe little or none would appear; and by Troughs or Trenches the Water may be carried from one Ground to another a very great Diſtance, if not hindred by ſteep Aſcents.

There

There is another ſort of an Engin uſed, which is called a *Wind Engin*, and may be uſed on ſtill Waters, where there is no Current to carry the Wheel about, or a Dam cannot be conveniently made to force it; and this ſerves indifferently for watering or drawing. Several have been the Inventions of Ingenious Men to accompliſh this; ſome have deſigned it by Horizontal Windmils, and by a Wheel, with Scoops or Buckets fixed to Chains; alſo by a Wheel carrying up the Water in Buckets fixed thereto, and by the Swiftneſs of the Motion caſting it a great way forcibly from it. But that I moſt approve on, as the beſt and leaſt chargeable, is the Vertical Sails, like the ordinary Windmils, only they are not ſo long, though more in number, placed in an Axis of a length proportionable to the length of the Veins, the one end reſting on the moveable hollow piece of Timber that is to move round over the Pump, as you have occaſion to turn the Reins, the other reſting on a Semicircle, in which there are ſeveral Notches and Stays, that it may be placed as you pleaſe: So let the Wind ſtand any way, yet by the Motion of the Semicircle you may have it at one end of the Veins or the other; and let the Pump on which the one end of the Axis reſts, be placed over the place you are to draw your Water out of, at the Noſe or Mouth, at ſuch a height as is convenient to conveigh it into a Trough; and this Pump may be made of a Diameter, according to the ſtrength of the Windmil; and obſerve ſo to order the Bucket, that it may always dip into the Level of the Water, which prevents much Injury and Trouble to the Work. This Pump may be round or ſquare, according to the ſmallneſs or largeneſs of it. Let the Handles of the Pump extend in length to the Axis of the Windmil, which muſt, to receive and move the ſame, be made crooked, like the Axis of a Cutler's Grinding-ſtone, or *Dutch* Spinning-wheel turned with the Foot; or the end of the Axis of the Windmil may reſt upon a Cylinder or Box made moveable on the top of the Pump, with the crooked Neck or End within the Cylinder; ſo that when it is turned any way, the end of the Axis is perpendicular over the Pump. And, moreover, you muſt take

take care that the Handle or Rod of your Bucket may turn Swivel-wiſe, to anſwer the Shiftings of the Wind as the Sails are changed; and theſe kind of Mills are of excellent uſe, and to be made or manured at a ſmall rate, and are eaſily to be repaired when out of order, or taken to pieces, and removed from one place to another, carrying off abundance of Water, if kept in continual Motion, which a ſcanty Wind will do.

CHAP. XIX.

Further Rules and Directions for Watering Meadow and Paſture, for the Improving and Fertilizing of it.

HAving ſpoken of conveying Water to the Ground, I now come to direct how it ought to be diſperſed on it: The Water being raiſed to the height you deſire, cut your main Carriage, allowing it a convenient Deſcent, that it may have a good Current all along; and let the Mouth of it be of Breadth rather than Depth, capable to receive the whole Stream you deſire; and when you are to uſe a part of the Water, let the main Carriage narrow by degrees, that at the end it may preſs the more forcibly into the leſſer Carriages that iſſue all along from it; and at every riſing Ground, and other proper Diſtance, you ought to cut ſmall tapering Carriages, proportionable to the Diſtance and Quantity of the Land or Water you deſign to fructifie, which muſt be very ſhallow, and many in number; for the Water running ſhallow and ſwiftly over the Graſs, greatly revives it. In the next place obſerve, that in drawing or watering of Lands you may make Drains to carry off all the Water, the Carriages being on; and therefore they muſt bear ſome Proportion to it, though not ſo large; and as the Water is conducted by the leſſer Carriages to every part of the Land, ſo the leſſer Drains muſt be made in the loweſt

loweſt places to lead the Water off; and as the Carriages leſſen, ſo muſt they widen as they run to drain the Water well off, as ſoon as the Land is well ſoaked into other Grounds; for if Water be left in low places, it proves very injurious to the Graſs in the Winter, it kills it, and in the Spring and Summer much hinders its growth, breeding Ruſhes and Weeds, though when drained produces good Paſture.

If you water droughty Land in the Heat of Summer, do it in the Night, or a very cloudy temperate Day, taking it off again before the Sun-beams ſhine hot upon it, leſt that conſpiring with the Heat that comes out of the Earth, deaden or ſicken the Roots of the Graſs, ſo as it wither and flag, rather than grow to any great Advantage.

In ſome places, for the more eaſe of Watering, you may have the opportunity to command a ſmall Stream or Spring, and to bring it down by Carriages upon the Lands, and proportion them, ſmall or great, according to the quantity of Water you can give; and if it be little from drilling Springs, make Stops in the Carriages, that it may water one Land firſt, and then by the Drains convey it to that which lyeth lower; and ſo by degrees to all, as Conveniency will admit; and the ſmall Springs in conſtantly working will bring much Improvement.

As for Springs that produce a hard harſh Water, proceeding from Alomy, Vitrioline, and Coal Mines, or Minerals, it is not to be brought on Lands, unleſs for the deſtroying of Ruſhes and Weeds; and afterward the Acrimony taken off by mollifying Waters, or well dunging with fat and nouriſhing Soil, to amend the Barrenneſs, and produce ſtore of Graſs.

CHAP.

CHAP. XX.

The proper way effectually to Drain Land, and reduce it to Fertility, either Arable or Paſture.

WHen Land is much incumbred by Water, and thereby rendred as it were uſeleſs, eſpecially where there is a Superfluity of venomous corrupting Water lying in the Earth, much occaſioning Bogginеſs, you may nevertheleſs conſider, that this Land, with ſome Labour and Coſt, may be brought to be very good; and in order to the procuring of it to be ſo, I ſhall lay down plain Rules and Directions:

Take ſpecial Care in draining ſuch Grounds, eſpecially where there are feeding Springs; and obſerve in this caſe the Deſcent, that you may the better by the Drain take away all the Water from the bottom, or elſe it will be of little Value; therefore obſerve the loweſt Level of your Drain, and ſo low that you may draw off your Water, and not any lower can you carry it away by this means; therefore be eſpecially careful herein; and then if you can get a lower Deſcent from this, carry your Drain upon the Level, till you find certainly you are got under the Moiſture, Miryneſs and Water, that either feeds the Bogs, or covers the Land, and go a Spade's Graft, or thereabouts, deeper, and ſo you need not tye your ſelf to a dead Leavel; but as the Moiſture lieth higher, or Ground riſes, ſo may you riſe in the working your Drain, keeping one Spades Graft under it.

Obſerve, that in cold Ruſhy Lands this kind of Water that creates much Barrenneſs, is found beneath the firſt and ſecond Swarth of the Land, and beneath that you moſt frequently find a little Gravel or Stonyneſs, in which this Water is; and ſometimes below theſe, in a hungry Gravel; but it uſually lies deeper in boggy Land than in Ruſhy, and a Spades Graft you muſt go deeper than

than the bottom of theſe. As for the Matter cauſing the Bog, it is eaſie to be diſcover'd, ſometmes lying within two Foot of the Superficial part of the Ground, and uſually within three or four; though ſome lie far deeper, as ſix and eight, or more; and having found this Spring that would willingly break out, were it not incumbred by the Load of Earth it is forced to wheeze through, and break its way by much ſpreading, dig a Foot beneath it, give it a Current in the Drain; and if it be ſwift, it will ſuck all the other Springs to it, and make the boggy Spungineſs of the Ground to ceaſe, ſo that in a little time a Drineſs will inſue.

Make your Drain from the bottom of the Bog, trenching it in the ſound Ground, or elſe in ſome low Ditch, ſo low as you conceive it under the Spring, or Spewing-Water; then carry up the Trench into the boggy Streight through the middle of it, one Foot under that Spewing-Water or Spring upon the Level, unleſs it riſes higher; for many times it riſes as the Land riſes, and at other times riſeth very level, even to the Head of the Bog, into which you muſt carry your Drain, or within two or three Yards of the Head of it; then at the Head ſtrike another Trench overthwart both ways at the middle Trench, as far as the Bog goeth, all along the End of it, continuing at leaſt one Foot under it; and this may work a ſtrange Alteration in the Ground, without any more Trenching.

Or to work it ſomewhat more certainly, conſider after you have brought a Trench to the bottom of the Bog, then cut a ſubſtantial Trench about it, according to the Dimenſion of the Bog, whether round, ſquare, or long, or three or four Yards within the boggy Ground; for ſo far it will drain well that which you leave without the Trench, underneath the Spring-Water Round; and when you have ſo done, make one Work or two overthwart it, upwards and downwards, all under the matter of the Bog, and in a Year at furtheſt your Deſire will be anſwered.

CHAP.

CHAP. XXI.

To Drain Fenny and Marſhy Lands with the leaſt Charge, and moſt effectually, &c.

FEnny and Marſhy Ground is another thing to be conſidered, and great Advantages to be raiſed by well draining them, ſo that they may be converted to Paſture, Meadow, or Arable Ground; for of this Land a vaſt deal in the Kingdom lies waſte, and turns to no Advantage, unleſs to a very few, and that inconſiderable; but to do this, it is not only taking away the Water from the Surface, or over part of the Turf or Swarth; for then might all Quagmires and Bogs be eaſily recovered; nor is it taking off the Downfalls, as the Fen-men call them; for then that might be eaſily done, and yet no perfect Draining for continuance; no nor the Land-falls, Land-floods, nor great Waters from off the Ground; nor doing all theſe in a way or uſual cuſtomary manner, that may deſerve the right and proper Name of Effectual Draining.

You muſt then to do it go to the bottom of the Cauſe, if you would perform the Cure, and take away that which is the Source, and feeds the Fen or Moor, making it barren and uſeleſs by corrupt and unwholſom Waters; and when that is done, it may be properly ſaid to be a Perfect Draining, and not before; yet the other is not to be diſcommended nor diſcouraged, where they are already done, or may be made hereafter; but the Perfection is, in reducing it to Soundneſs or Perfectneſs of Mould, that the Wet may not follow the Plough; or it only bearing courſe Graſs in the Summer, be overflowed in the Winter; but this is well done, whether the Earth is Sand, Clay, Gravel, or mixed Earth, when it returns to a perfect Swarth, pure Turf, producing the ſmall Thiſtle, Crowflower, Clover and Honeyſuckle; then is the Quinteſſence of the Earth properly prepared; and in feeding

feeding and corning they will naturally return to be the richeſt of all your Lands, as appears by many already brought to this Perfection lying near Rivers, and under the Level of the Sea; and moſt of the Ground in *Holland* has been improved this way, to a conſiderable enriching of thoſe People by fat Paſtures and good Arable Lands.

But waving ſome Objections that may be made to no purpoſe, by ſuch as are not deſirous ſuch publick Works ſhould go forward, becauſe perhaps they have a Cow, a Horſe, or a few Sheep to feed as Commoners, which can graze ſufficiently about the Edges of theſe overflowed Lands, I ſhall come to the Point, and give an Eſſay of this matter, which, well put in practice, may turn to great Advantage.

Conſider then, that the greater the Overflowing is, the heavier it lies on the Land; and for the paſſing off theſe the Water-cuts and Works muſt be proportionable, and the Labourers in it the more; for this Work muſt be done ſpeedily, a little neglect ſetting it frequently a great way backwards, if the Works be conſiderable; and therefore going about this neceſſary Improvement, raiſe ſuch Banks on the outſides of the Fens, as may keep out the Land-Floods coming from higher Grounds and Ditches to carry them away on the outſide into ſome adjacent River or Water-courſe that carries them to the Sea, or ſome convenient River; by which means you may have nothing to do with any thing but the proper Water in the Fens; then conſider how to draw your middle Trench, which is the main, to the beſt Advantage, that the Waters may paſs from others into it.

Take notice of the Advantage of the Ground in all its Particulars, as to its aſcending and deſcending, its Level and Hollow; ſo that having truly caſt every thing well in your Mind, drain the Water off by Trenches or Engins that will caſt it a pretty way in great abundance from the lower parts that lie beneath the Level; alſo by the help of Men, where they are to be had, with Scoups and Buckets.

When

When a Drineſs appears on the Surface, and it is viſible, yet there are ſome Springs, ſearch for them; and when you have found them, do in all reſpects as by the boggy Ground mentioned in the foregoing Chapter; and as for the ſmaller Hollows, if they dry not, it matters not greatly; if they have no Springs in them to cauſe an Overflowing in Winter, for they will ſerve to Water and Bathe your Cattle in the Heat of Summer, or produce a numerous Fry of Fiſh for ſtoring other Ponds: As likewiſe keep Game there, to your Advantage, by alluring the Wild-Ducks, Geeſe, and other Water-Fowl, of which conſiderable Advantage may be made; but be very careful after this, that your outward Banks break not, to let in the Land-Floods from the Hills or high Grounds.

If the Trenches are neceſſarily to be many, endangering your Cattle falling into them, you may fill the ſmaller that come from the Springs, to the greater, with Pebbles and Flint about two Foot, laying them as light as you can, and over them Flags, Ruſhes, and Turf, and upon them Earth to the Level, and the Water will find a Paſſage among the Stones as in a Vault.

CHAP. XXII.

Tools and Inſtruments proper and uſeful in the working part, and order of Draining Land, &c.

THE firſt thing neceſſary is a good Line, about 32 Yards in length, made of the beſt Water-wrought Hemp, about double the thickneſs of Whipcord, and a Hand-Reel to wind it on, that you may draw your Works by it as near unto the Streightneſs of the Line as poſſible; and by the Length you may meaſure your Work by the Rod or Pearch, to know how it goes on.

You

You muſt alſo have an exact Water-level near, or altogether 5 Foot in length; which Inſtrument many have eſſayed, and made ſome open, with a Channel for the Water to run all along upon a three Inch Board, with Sights true to the Water, placed at each end, each at a juſt Proportion from the VVater to direct the Level; but it lies ſo open to the VVind, and is ſo troubleſom in removing, that I approve not of it: Then make one for the more eaſie Carriage and true Performance of this VVork, to fold into another ſquare Staff, about 5 Foot, or 5 and a half, made of the beſt young ſeaſoned Oak, the Level or Barrel 4 Foot and a half, which Barrel in the midſt of it is to be planted into the top of the Staff, and ſo much of the one part of the Staff, and juſt half the length of the Barrel take away with a Rabuting-Plain or Moulding, till both join together, and with theſe Joints make one compleat ſtreight Staff and formable, only about a quarter of an Inch taper upwards, from the bottom to the top, that it may not be too heavy; and the Sights are to be fixed into both ends of the Level-Barrel, that ſo they may ſtand firm and hold VVater, and yet become very little Annoyance either to Sight or Practice; and in carrying it, it is a ſtreight Staff, with a ſtrong Pike in the bottom of it, to ſtick into the Ground when they uſe it not; and in Exerciſe being unfolded, not much unlike a Surveyor's Croſs-Staff.

The next uſeful thing in this VVork, is a Trenching-Plough and Coulter, whoſe particular Uſe is to cut the Trench on both ſides with great Expedition. To make this, take a piece of tough VVillow Timber, about the bigneſs of a Spades Stale ſomewhat ſtreight, only at the nether end it muſt look a little up, with a Neck like a Foot to run on the Ground, and juſt above the Neck muſt be placed a little Coulter, to ſhear or cut the Ground, firſt on one ſide the Trench and then on the other; and where this Coulter is wedged in, the Stale muſt be plated with Iron to hold it the firmer; and having caſt your Trench by Line, then uſe this to cut out the ſides of the Trench, which it will do almoſt as faſt as a Man can follow it, cutting it out to the end by running along the Line;

Line; and when one ſide is done, place it to the other, and do it in the ſame manner; and this is called the plain Trenching-Plough. But if you would have this done with more exactneſs, then place in the Foot of the Staff, and in the middle of the Foot, a little Brazen Wheel, about 4 Inches high, that the Foot, bearing itſelf lightly on the Wheel, may bear itſelf with more eaſe: but this Wheel muſt be well planted in the Foot, upon Plates, and a little Iron Axle-tree; and theſe you may uſe to cut Turf overthwart, and Trenches 18 or 20 Inches broad, or ſuch a proportion as is required to carry off the Water. And this Turf and Earth taken up by a trenching-Spade, will be of good uſe to Swarth bare Ground, or fill up low Places.

The turning-Spade muſt be made with a Bitt, looking up twice ſo much as is requiſite for an ordinary Spade, with a fine thin Shooing alſo, looking up the Bitt of it, very well Steeled, and more broad at the Point, or nether-end of the Bitt, than at the over-end by half an Inch; ſo that by this means, it will take up Turf all of one thickneſs, juſt at a Natural height as a Man ſtands when he uſually Shoveis: and one of the ſame Form, a little leſs, may be uſed with Advantage in cleanſing the bottom of Trenches, and are very uſeful in Banking, and Levelling high Anthills.

The trenching Spade, is another Inſtrument very uſeful in this great Work, which ought to be between 4 or 5 Inches broad. The Tree muſt be made more of Compaſs, and looking up by far than your ordinary Spades; ſo that it may carry a Trench level in a direct Line, move by the ſtrength of Arm, and guided by the bottom of the Belly. The Spade Shooe muſt be made with two Sides, or Langets, up from the end of the Bitt, as if two broad Knive blades were placed on a common Spade, to look upward with their Points from the end of your Spade Bitt, but they muſt be made a little ſtronger, yet not above 2 Inches broad; at the very Bitt, as thin as the Work will bear, and narrower and narrower upwards, till it come to half an Inch, and 5 Inches long, made very true and exact, ſharp and ſmooth, or it will not work forth its Coar, and

Furrow clearly and eaſily, but exceed the ſtrength of a Man to manage it, in making good Work.

This Tool cuts out its Furrow, and Coar ſo well, that within a Week, if your turn be ſerved, you may lay it down again in the ſame evenneſs, and it will be no ways prejudicial to the Graſs; and when it is a little ſetled, it will become of its former evenneſs with the other Ground.

The paring-Spade is another Tool uſeful in this Work. The Bitt of this may be made all of Iron, being a ſtrong Iron Plate, having a convenient Socket to put a ſtraight Helve, or Stale into, that it may be faſtened, not eaſie to come forth again, but when you pleaſe: The Bitt muſt be made 20 Inches long, the nether-end, and two ſides, well Steeled; the nether-part of the Bitt a little bellied, or ſquared, and the ſides a little compaſſed, or hollowed; and the ſides, and end, as ſharp as they can be made: for the proper uſe of it is, now and then, to cut a Trench in Valleys and low Places, where the trenching-Plough either Wheel'd or Plain, cannot conveniently come at it; yet principally to pare off Trenches after the firſt Year, whoſe Edges will grow ſo thick with Graſs, that the Water, as to its Currency in paſſing, will be obſtructed, and to dig it, will break the Trench, and cut it too thick: but with this, as with a cutting-Knife, you may take it off all along the Trench Line.

The trenching-Gauge is another Inſtrument, made like a long Shovel, with a ſharp Shooe ſemicirled at the end, the Stale a little bending upward; and this is to be uſed at the trenching-Spade, in a round bottomed Trench.

CHAP

CHAP. XXIII.

The beſt way to Improve Drained Fen-Lands to great Advantage, &c.

HAving already given Directions for Draining, and how to procure Materials in order to perfect ſo neceſſary a Work; it will be proper now for me to ſpeak ſomething of the Advantages accruing thereby.

As for that which is moſtly dry Fen-land, and ſometimes but partly under Water, and that not always, I conſider it according to the quality of the Soil, to be the beſt capable of raiſing preſent Profit; and if you have enough other Ground for Grazing and Meadow, you may Plough it up, and it will prove excellent Hemp, and Oad-land, produce great Crops of Cole, and Rape-ſeed, which will indeed, grow on worſe Land; ſo that by a little Marling, Liming, Aſhing and Dunging, you may Improve it to bear excellent Wheat, Barley, or Rye, ordering it as has been directed for Barren-land, upon the Account of thoſe ſorts of Grain.

There is a Second ſort, ſubject only to be drowned by up-Land Floods, and great Rains, and dry when they are gone, or in a dry Seaſon; this I count worſe than the former, and is proper to be Ploughed up, raiſing it as high as your Drains will carry off the Water: in the Lands 3 Yards over, that will bear two Caſts of Seed, changing your Furrows in Ploughing, to ſtir up the Mould the better, that the Water may ſoak out of it into the drain-Furrows; and be careful not to make your laſt Furrow always in one place.

As for the Manuring it, let it be with Lime, Chalk, Aſhes, hot Dungs, as Horſe-dung, Cow-dung, or the like; ſo in the uſual Plowing, it will bear excellent Wheat, Oats, Peaſe, and hold good ſo for three Years; but over Ploughing this kind of Land, takes the Heart out of it, therefore

I conclude it the most convenient, after three Years Sowing, to lay it down for Meadow or Pasture; or a fourth Year you may Sow it with Clover, though it will bear Corn much longer, but not a considerable Crop, till it have rested two or three Years to recover its Spirits; and when you lay it down, scatter it lightly over with good Hay-seeds.

The third sort of this kind of Land, is that which lyeth very low, and deep, and has been long under Water before recovered, that it was turned to Turf, or Bog very little useful, except two or three Months in the Summer, and that in a very dry Season, and this, as it is naturally, is not good for the feed of Cattle, rendring them lean, and unsound; therefore when drained, to bring it to a better State, pare off the Hassocks, and rough Turf the Roots, Strings and all, and lay them a drying, conveniently hollowed about the beginning of *May*; so that when it is turned and dryed well with dry Fuel, set it on Fire; and when it is turned and dryed well, burn it, that the Earth may crumble lightly, and scatter Earth and Ashes over the Land; then Plough it up, and divide your Land into such Ridges, and Proportions as the Drain will bear; and so it will be fit to take the Impression of any proper Seed, and especially Cole-seed, or any Grain, if you lay your Lands sound and warm, and not Plough them too long; and when you lay it down, let it be either upon Oat-stubble, which will swarth it well the first or second Year, or upon Wheat, or Rye-stubble, harrowing and smoothing the Land, and then it will be well covered the first Year: And, if any of these Lands have been recovered from the breaches of the Sea, or overflowings of Salt water, you must flow them moderately with fresh Water, to take out the Saltness; Marle them well, if Sandy, and lay on some heartning Soil; keep the Trenches you have made strong, if they be new Works, turning them well to the Sea-ward, that the Waves may not, by their beating, work into, and wear away the Earth: for when they are well setled, if they break, admit of holes, or eatings in it, it is a sign the Sea is undermining your Work to ruin it; and therefore it requires speedy Reparation. These Lands

well manured, will bear moſt ſorts of Grain, and in a little time very good Paſture or Meadow.

CHAP. XXIV.

Diſcoveries of Abuſes in Ploughing, and how to Remedy them, &c.

AS in all other things there are ſome Defects, ſo eſpecially in Ploughing, which cauſe ſome to blame the Soil, when themſelves are in fault; therefore I ſhall endeavour to Rectifie ſome Abuſes herein.

In the Firſt place then for true Ploughing; The Plough ſhould be rather made to be ſuited to the Irons, than the Irons to the Plough; for if the Plough-irons be not made exceeding true in all points, according to the Land deſigned to be ploughed, and wrought fair and ſmooth, the Plow-wright cannot work true to a falſe foundation, and if not wrought true, it will rarely go true, unleſs after much wearing, being wrought into work, it may plough, at laſt, reaſonably well, but by that time it will perhaps, be in a manner worn out, but never with that continuance and eaſe as if it were of true workmanſhip; another defect is, in not well ſteeling the Irons, and making them ſharp and well pointed.

In the Second place, He that works a Plough according to the Rule he has only learned by Trade, not knowing how to hold a Plough, nor to apply himſelf to the nature of the Land, or, according to the alteration of it, may ſcarcely be able to diſcern the falſity of the Smith's workmanſhip, or un-uſed to all ſorts of Lands, and the ſeveral kinds of Tilths the Plow-man gives, his Rule cannot be certain; and therefore if he makes a true Plough, he muſt rather hit on it by gueſs, than infallibility.

Thirdly, There may be abuſe in him that holds the Plough, if he be not of ability to order it, to fix and alter the Irons, and the Plough alſo, if occaſion requires it,

according to the divers natures of the Land he plougheth and to the manner of his ploughing, and keep the Irons in a keen, and true posture; for at sometimes he is to throw down his Land, and at other times to raise it up, sometimes to go up Hill, and at others down Hill, and then again upon level ground: and in these cases, if the Plough be true, and the Plow-holder unskilful, there is a great defect, and many good Ploughs are utterly spoiled in the mis-usage.

Fourthly, Consider that all Ploughs are not to go in all Seasons, nor upon all sorts of Lands; therefore must they be chosen suitable to wet and dry, tough and loose Lands, or the Cattle may he spoiled, the Man toiled, and the Plough spoiled, and yourself disappointed in the well ploughing of the Ground; therefore for the discovery and rectifying these Abuses.

First, As to the Smith, and his truth of workmanship, they principally lye in the three Materials of the Plough. 1. The Share. 2. The Coulter. 3. The Breast-plate, or Shield; or, as some call them, Shivers. All which being made true, and according to the natural cast of the Furrow, so that the Earth sticks not upon the Plough, but the Irons wear bright, and clean, it is a proper sign of the truth of workmanship on his part. Then to describe these, If it be a Share made with a Pan to put on a wooden head, then it must be made deeper than the ordinaty Share, but in breadth the Pan must not be too large, or wide, and the Plain made broad, whelming, or descending to the right Hand: and in this case, there are these two Advantages, the deeper the Pan is, the thicker and stronger may the head be put on, and it will last the longer.

Secondly, The Fin, or Tush of the Share will whelm the more when set down to the Work, which is the level or bottom of the head, or rather somewhat lower, which will give it a considerable advantage in clearing the Earth at the Throat, or first entrance on the Nose of the Shield-board with more ease; for sticking there, it will at once be gone all along the Plough.

A Share made most hanging from the Nose of the Breast-board, and not flat, as most are, *viz.* it should be pitched,

ed, or ſet on the Plough-head, a little hanging likewiſe on the Right Hand, and the Plough-head pitched hanging likewiſe: As for the breadth, I muſt leave it to Experience, as the nature of the Land requires it. If upon a Stony, or twitchy Wood-land, it muſt be narrower, and the more Flinty the narrower yet; but as the Land ſoftens it may be encreaſed in breadth, ſo that it may cut up very clean the full breadth of the Furrow you carry with you, and not take it with the breadth of the Plough, which encreaſes the weight and ſtrength, as thoſe Ploughs moſtly do, who go with narrow long-pointed Shares.

Secondly, As for the Coulter, it muſt, for truth of workmanſhip, be well ſteeled, and wrought thin and ſharp on the edge, the point and the edge looking directly forward, neither carving or turning towards the Land, for that is uſually apt no draw the Plough too wide, and if it look into the Furrow, it will draw it too narrow, but let it be juſt ſtraight in a line to the pitch of the Plough. And now for the Plough-holders Direction, I ſhall give ſome general Rules.

Firſt then, It is to be conſidered, whether he be able to judge and determine the truth of the Plough-wright's, and Smith's workmanſhip, and in caſe he finds therein an Error at firſt to mend it, which is then eaſier done, than when the Plough and Irons are wrought into it, or a greater Error.

Secondly, When he has his Plough, and all other Accoutrements compleat, let him be ſure to make his firſt tryal upon workable and regular Lands, and not upon hard, rooty, or twitchy Grounds; becauſe upon ſuch, a rule cannot be obſerved, nor a true demonſtration had of the goodneſs, and truth of the Plough; becauſe ſuch Lands will more eaſily writh, and ſuddainly wrench a new Plough out of his work, before it be wrought into it; but when he has tryed, and well ſcowered it in moderate Land, he muſt bring it by degrees to others.

Thirdly, Having got a perfect Furrow, his Plough avoiding all Earth as it takes it on a breadth, carrying a fair clean Furrow along with it, turning it cleverly from it, let him look upon it as a choice Plough, and clout it with

clouts or ſlips in all the wearing places ſmooth and even, ſtrengthening it with an Iron bolt at the Neck of it, from the bottom of the Head through the Beam, and there ſtrongly drawn and clottered faſt, if he have none before, that the Head may not draw the leaſt; for a Plough having been drawn in the Breaſt, or Neck, it probably may be wholly ſpoiled. The next care muſt be, to keep the Irons ſharp, clean wrought, your Coulter edge thin ground, the Phin ſharp, with a very ſmall point upon the Share, well ſteeled and tempered; and then if your Cattle be well matched, or ſized, it will go with abundance of eaſe and celerety, and the Ground be well ploughed, to the Ploughman's credit, and the Maſter's profit. Laſtly, He muſt be able to judge of the Land, and Seaſons of ploughing, and to ſort his ſeveral Ploughs to each alteration, or, at ſome Seaſons, he will not be able to Plough, eſpecially all his Land; therefore this buſineſs, properly timed, is a great Advantage, and much facilitates the Labour.

CHAP. XXV.

A Deſcription of the moſt neceſſary ſorts of Ploughs uſed for Tillage in England.

AS for Ploughs, there are ſeveral ſorts uſed in *England*, according to the Cuſtom of the Countries, or the liking of the People, and particularly four ſorts are much affected.

1. *The Single-wheel-plough, and Foot-plough,*
2. *The Wheel-plough, called the Double-wheel-plough.*
3. *The Simple-plain-plough, without Wheels, or Feet.*
4. *The Dutch-baſtard, or plain Dutch-plough.*

Many other ſorts there are, ſome of them alter in their Heads, others in their Beams; ſome again in their Stales, and

and moſt in their Shares; of all which, it would be too tedious to diſcourſe; wherefore I ſhall properly handle the Four premiſed in this Chapter, becauſe I conceive them all very uſeful in ſome ſort of Land or other. But to my purpoſe.

Of the Single-wheel-plough.

The Single-wheeled-plough may be uſed on almoſt all ſorts of Land, and is of much lightneſs, and nimbleneſs in working. The main Plough-beam that this ſort of Plow requires, is very ſhort, *viz.* about five Foot, and muſt be made of ſtrong and laſting Wood, as ſmall and light as may be; to which is another falſe Beam aded, below the Coulter-hole, under the other, and fixed to it by a Staple drove up into the true Beam, with a caping upon the falſe Beam-end, and ſome other way; which falſe Beam is that, by which the Plow is drawn, giving an opportunity (by a Standard put into the end of it, bored full of holes, and paſſing through the Maſter-beam) to let the Plough up and down to any gage of depth, or ſhallowneſs, as ſhall be required, and the Beam is proper to guide it.

The Sheath is pitched very forward from the Beam into the Mould of the Share; whoſe Share, as I may term it, is made as long as the head ſhould have been, and of the ſame uſe of the Plough-head, made of two ſmall ſlips not ſo heavy as the head be: and there being no head at all, the Land-handle is put into the Share-mould with an Iron Pin, as alſo is the Plough-ſheath, and fixed there faſt with an Iron Pin, and the Share forward, made like another Share; and before the Breaſt-plate is a hole made through the Share, and there it is riveted, or elſe with an Iron hook put into a long Iron ſlip; which is to be made an Inch, or an Inch and a half broad, coming up to the Beam, before the Noſe of the Shield-board, running through it, and is clottered on the top of the Beam, lying on the Shield-board, and the Shield-board is compaſſed a little below in the Breaſt; and ſo before the middle begins to wind and whelm toward the Furrow, and ſo more and

more winds to the very end, and this Breaſt-board is placed cloſe on the Share made with a long Point, and narrow or broad Phin, as the Land requires, and ſometimes any ordinary plain Share may be uſed and placed on the Head, as other Ploughs are, either with a narrow point for Stonyneſs or Gravel, or with a broad, plain, and long-ſharp Point for mixed Sandy Earth.

The Pitch of theſe Ploughs are about two foot in depth, and 8 or 9 inches in wideneſs; and always be careful to obſerve, that the uprighter you pitch your Plough, it goes the narrower, and the more hanging it is, the broader it goes: As for the depth, I cannot conceive it is much material, becauſe it is born up from the falſe Beam, till it comes to a true working pitch; and an Iron Axletree is planted in that falſe Beam, an inch or a little more in circumference, and about a foot long, 9 or 10 inches before the end of the falſe Beam, and put in ſquare unto the Beam, that ſo it may be very faſt; and at the other end of the Axletree runs a Wheel upon it, about 18 or 20 inches, and ſometimes a little higher or lower, as ſuits beſt the Dryneſs or Wetneſs of the Ground; and this guides the Plough from the falſe Beam that it cannot ſling or draw into the Ground, and ſo either with Horſes or Oxen is drawn at the end of the falſe Beam with a Cock or Clavies, as occaſion requires it.

That which is the Standard, faſtened to the lower Beam, and runs through to over-gage the Plough, ought to be near two foot high; and in the over-end two holes are to be made to put the Horſe-Reins through to come from the Horſe-head to the Plough-handle; ſo that he who holds the Plough may guide him, and under thoſe divers removing holes, and in the Beam one or two equal to thoſe in the Standard, and an Iron Pin put through them both.

Theſe Ploughs are very expeditious in a light Ground, managed by one Man, and may be drawn with one Horſe to plough in Seed-Seaſon, an Acre a day. The Double-wheel-plough is extraordinary in uſe in *Hertford-ſhire*, and many other up-land Counties; very uſeful upon Flinty and Stoney Ground, as alſo in hard Gravel, or any other

other hard Ground whatſoever, after it comes to exceed its natural Temper: It is uſually drawn with Horſes or Oxen in Double-geer two a-breaſt, and ſo indeed they draw the ſtrongeſt, though they injure the Ground the more by Treading, therefore it is my opinion in wet Seaſons they may be put to draw ſingle in length.

Of the Double-wheel Plough.

This *Double-wheel-plough* is beſt made of a ſtrong ſhort cleft Aſh, about ſix foot in length, the Beam requiring to be contrary to all others in the compaſs of it; the crook or compaſs muſt look upwards, and the Land-handles are to be placed at the great or nether-end of the Beam, as in other Ploughs; for it uſually is made with one handle, and the Plough-ſtaff is to ſerve in the place of a Furrow-handle, and in length anſwerable to the proper handle, which tends much to the eaſie and certain holding of the Plough.

Make the Sheath of the tougheſt of young Aſh, well ſeaſoned, ſet with a very good Mortice much forward: Let the Joints be true and well cloſed unto the Beam, driven up hard with a Braget behind it, to keep it from declining, ſo that in the ſtrongeſt Land it is to cope with all, it may ſtand well to its work.

Let the Head be pitched as ſtrongly as may be to the nether-end of the Stilt and Sheath, being to be well pinned through both, and the Share muſt be pitched upon the Head at a very deep pitch, and ſomewhat hanging; by which means the Plough will go much a-ſhore, becauſe the Holders uſually go two Furrows off the Plough wider on the neer ſide of it: And as it is pitched deep, near a full yard, ſo it is likewiſe very broad, being near half a yard; and that I conceive to proceed from the Man's going ſo far wide of the Plough. The Share, for this Plough, muſt be made exceeding narrow, yet very ſtrong, and running out to a good length in a ſmall point well ſteeled; and ſometimes, as the work or nature of the Ground requires it, you may add a Tuſh or Pain, but they likewiſe make it very narrow, and ſo it muſt conſe-

quently be the Hardneſs and Stonyneſs of the Land, not admitting of it: As for the Coulter, it muſt ſtand a little above the Share point, not before, but rather behind it.

The Wheels of this Plough, that properly bear it, may be about 18 or 20 inches high, and made of about ſix Spoaks of Wood or Iron, well faſtened into a Nath or ſhort Hub of Wood, and a Bark Hoop or Iron Binding round about them, and to run on an Iron Spindle about two foot long, running round in a Boulſter, borne by the Iron Spindle three or four inches thick, lying between the Wheels, fifteen or ſixteen inches or ſomewhat more in length, and 18 or 20 inches at leaſt in heighth, ſtanding up to bear the Plough-beam; and upon that Boulſter muſt go up an Iron Pin 8 or 9 inches above the Beam, to gage it as to its true depth; and to the middle of the Boulſter muſt be faſtened an Iron Chain backward, with a ſtrong Iron Collar, much in the faſhion of a round Ring, which compaſſeth the Beam, being moveable, that as it is put forward or backward, the Plough may go ſhallower or deeper, as the occaſion requires, and may be held in its place by an Iron Hammer, the Helve or Shaft being all ſolid; and by taking it out, and putting it in, to take up or let down at pleaſure; and, as the Plough at the Land's end turns out of work, it muſt have ſome ſtrong Cords or Whitleather to come up from the Boulſter to keep the Beam from ſlipping off, being empty.

This Wheel-plough requires a conſiderable Strength to manage it well, becauſe of the conſiderable Lengths they are made of, which carries in working a conſiderable weight of Earth upon it, adding very much to the burthen of it, which in ſome degree may be remedied by contracting theſe Ploughs unto a ſhorter or narrower compaſs, and taking off as much of the weight of the Wood and Iron as the ſtrength of the Work will bear upon which it is to be employed.

Of the Turn-wreſt-plough.

There is yet another Double-wheel-plough, called the *Turn-wreſt-plough*, moſt commonly called the *Kentiſh-plough*, as being very much in uſe in that County: This is a Plough, whoſe Beam may be made of any Wood for the bigneſs of it, but Aſh I account the beſt, but the two handles may be made of one forked piece of any Wood, and the Beam tennanted into the Stilt before the Fork running down into the Plough-head: And as for the Sheath, it muſt be a good ſtrong piece of well-ſeaſoned Aſh, tennanted into the Beam directly down-right; yet looking forward at the nether-end, and ſomewhat fixed into the head, as other Ploughs are; however, the Sheath downwards muſt be far bigger, and the head of it pitched at a very great depth, or elſe at random, for depth being carried with two Wheels, but nothing like ſo near and eaſie as the before-mentioned two Wheeled-plough. For breadth, it muſt be pitched under the Beam upon a ſtraight line; nor is there to be any Shield or Breaſt-board on either ſide the Plough, as other Ploughs have, but a little piece of Wood ſet along the Sheath forward, about three inches broad, cloſing upon the Share, juſt as if you were to cut a Dye in the midſt from corner to corner, and place the flat-ſide to the Sheath and the edg forward, which is to be the Breaſt-board.

As for the Share, it is to be put on the Plough-head with a Phan half round upwards, and flat downwards, and ought to be tuſhed a little on both ſides, as the ordinary Ploughs are, and ſo it is to run out to a ſharp point.

Some of theſe Ploughs are made with one Wreſt, others with two, and the latter I account the beſt and ſureſt; and theſe Wreſts are to be put upon Pins, one in the Sheath, ſtanding immediately under the Breaſt-board, and the other unto a longer Pin, or round Staff fixed unto the bottom of the handle as wide as the Furrow; and this Wreſt may be only a round Stick about two foot long, or as ſome have it, a half round with two holes to put the aforeſaid Pins into; and at every Land's end, this Wreſt muſt

muſt be turned on the other ſide; ſo, where there is two, they muſt both be likewiſe altered, and one placed two or three inches higher than the other, and the higheſt is to be placed broader by an inch and a half, two inches, and ſometimes three inches, than the lowermoſt, that ſo it may cleverly and cleanly caſt the Furrow over.

As for the Coulter, it muſt be moveable in the Coulter-hole (that being made very wide) at every Land's end; and to this purpoſe there muſt be a ſtrong Ground-Oak Plant about an inch and a half over very tough, and with that you may (having two pins placed on the top of the Beam at an equal diſtance one from the other, and both equally diſtant from the Coulter) wreſt it, or wreſt it from one ſide to another, and there hold it till you come to the Land's end, and there turn both Wreſt and Coulter.

This is a very good ſort of Plough for ploughing Lands that lye on the ſides of Hills, and cannot well be plough-ed either upwards or downwards; or if you have any flat level piece where you would not have one Furrow diſcovered, this will perform it very well, the foremoſt Horſe or Ox going in the Furrow, and the neareſt upon the Land, and ever double; and for thoſe ſorts of Ground it is extraordinary uſeful to caſt the Furrow.

Of the Double-plough, ploughing two Furrows at once.

The Double-plough is in many places advantagious, taking two Furrows at once, though a very plain Plough; it is made with one long Beam, and another ſhort one, not much more than half the length of the other; the firſt muſt be made a compleat plain Plough, except the Handles, which may be very ſhort, only ſo long as to receive the Beam with the Land-handle, and place the Shield-board on the Furrow-ſide, which may be done with a round Staff, from the Beam to the Shield-board, which Handles excepted, it is one compleat Plough in all particulars. The hinder end of the Beam muſt be left a little ſtronger, becauſe of the faſtening the other Beam firmly to it.

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As for the hindermoſt Plough, it muſt be made in all the Members and Branches like the other, except the Beam cut off about three inches before the Coulter-hole, and the Handles at length and ſtrength like an ordinary ſtrong plain Plough; which being done, as the Handles upon the laſt Plough, you muſt ſet to the placing of it in its place.

As firſt, the Plough ſtanding in its working poſture, the handled Plough is to be affixed to the nearer ſide, or the left-hand, one Furrow breadth under the other; and juſt in the very ſame poſture, both for breadth and depth as the other, and ſo held off from the firſt Plough-Beam by a lining or filling of Wood, juſt the Subſtance as may continue it faſt and firm to a juſt Furrow, and there drawn cloſe and firm to the Maſter-beam with two ſmall bands of Iron, and a broad Slout or two of Wood, all which may be ſo keyed and cramped up, that it may be in one ſolid Beam, and conſequently move as the firſt moves, either for depth or height; and this I hold may be the beſt uſed with the Plough-foot to guide the depth of it, except you place a Wheel to the foremoſt Beam, but do it not in the falſe Beam, becauſe Experience teaches it is beſt in the end of that Beam to have as good a Mortis as the Beam will bear, which is a Mortis for the foot, and in it place a ſquare piece of good tough Aſh, or, if you can conveniently compaſs it, Iron, into which you may put your Iron Axletree with its Square, and ſo fitted into three or four ſeveral holes of it.

By the means directed, the Plough may be ſet at a Working-gage, and continue or alter it as it beſt ſuits your buſineſs; and the Plough thus accoutered, you may very well paſs it on ordinary Arable-Land, a double Proportion alſo upon Lay-turf that is clean: And this may well be managed by two Men and four Horſes, that have been a little uſed to the Work; but upon rough or ſtony Land, it will not do ſo well.

Of the Plough carrying a Harrow after it.

There is yet another kind of Plough that will carry a Harrow after it, and do both works at once; and this is of good esteem in *Norfolk*: This must be a common light Plough, and a light Harrow which must contain three little light Bulls, and about five tines in a Bull, and they must also be made light, and fixed to the Plough at one end of the Beam, that on the turning of the Plough this may turn with it, and as the Plough turns one Furrow, the Harrow harrows it, over-reaching two more Furrows; and so by the over-reaching, it strikes two or three times in one place, which may well cover the Corn: But then here some will object, It must needs take up a great deal of time for a Seedsman to sow as the Plough works, when but one Acre can be well ploughed this way in a day, and he can sow ten. To this I answer, A Ridle placed on the Beam of the Plough, to scatter the Corn proportionably as the Harrow follows to cover it, the motion of the Plough jolting or forcing the Seed out by such degrees as it proportions to being scattered out of the hand, and by these means much Labour and Time are spared, the Business being done at once that requires three times; but this cannot in words be so well described as by seeing and practising.

Of the Dutch *Plough.*

The *Dutch* Plough is proper for Fen and Marish-Lands, where Stones root, or hard places come not to hinder it, and the chiefest advantage it hath, is Ease and Expedition, by reason of the Breadth and Sharpness of the Share, which is to be made about a foot and a half broad, sharp in the Point, and as thin in the Thin as a Knife, cutting up a great broad Furrow very clean, with much possible ease.

As for the Coulter, it is especially applicable to the aforesaid Lands, but may be used upon any fair pare lay Turf if it be old Pasture: As for the bastard *Dutch* Plough, it is more suitable to the various sorts of Land, but the

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Irons must be prepared very sharp, as the former, made of the best Steel to the point and edge of the Share and Coulter, carrying a true proportion; but these last, not being much used in *England*, the particular description of their make will not much avail our English Plough-wrights, nor indeed the Plough-men, who have sufficient experience of our own substantial Ploughs.

Thus have I been pretty large upon this main Instrument of Husbandry, that nothing necessary in this Work may be omitted, that can reasonably conduce to the advantage of the industruous Husband-man; and indeed, on his care (next to the Divine Providence) the Supplies of the Nation, in a great measure depend; for if the Plough desists, and the Earth be not manured for encrease to produce its fruitfulness, neither Gold nor Silver can encounter with pale Famine, which must needs encroach upon us, Bread being properly called the Staff of Man's Life, *&c.*

CHAP. XXVI.

A Computation of Work to be done by one Man, in one Day, in the sundry Occupations relating to Husbandry.

HAving proceeded thus far, for the most part upon Particulars, I come now to say something in General about Husbandry, briefly touching several things worthy of remark; and these I must chiefly attribute to a Country, where it is tolerable, without any extraordinary difficulties.

As for Ploughing, a Man may, in light sandy Ground, turn up two or three Acres with one Team in a day: when in stiff clayey Ground, one and a half is a sufficient day's work; and in very light Ground, four at the least; and what is sowed, may be harrowed the same day.

An able Man, expert in mowing, may well Mow (in a

a good deep loggy Meadow, or a rough and uneven Meadow) about an Acre and a half in a day; and of ſhort thin upland Meadow, at leaſt two Acres each day.

As for mowing Barley, or Oats, if they be loggy, thick, and beaten down to the Earth, making fair work, and not cutting off the heads of the Ears, leaving the Straw ſtill growing, one Acre and a half a day: but if it be thick and upright, then two Acres, or two and a half may be reaſonably mowed. If the Corn be ſhort and thin, then he may Mow three, and ſomewhat more, without over-labouring. Of Beans, he may Mow as much; and of Peaſe and Beans, having a Hook to follow him, no leſs; for this is a Work the leaſt troubleſome.

As for Reaping, one Man with a Binder may compaſs an Acre of Wheat, or Rye in a day, if it be choice good, and well-ſtanding; but if flatted, or beaten down, then three Rood is very reaſonable, and five Rood if it be thin and upright. Of ſmall Peaſe, Fetches, and the like, he may cut up two Acres a day. As for the gathering and inning of Grain, it cannot be well proportioned, becauſe ground bears more or leſs, the inning may be at a nearer or farther diſtance; and therefore I ſhall leave this to the Maſter's care, or ſuch as he ſhall appoint to ſee it haſtened, with as much convenient ſpeed as may be.

In thraſhing Corn, care, as well as haſte, muſt be obſerved; and if the Corn be full and clean, free from any abuſe, or poverty in the Grain, a Man may Thraſh, and order, four Buſhels in a day of Wheat or Rye; ſix of Oats or Barley; eight of Peaſe or Beans; eſpecially if the Peaſe be full and in plenty, otherwiſe he cannot Thraſh ſo many of them as of any other Pulſe; for though they require as many ſtrokes, and as much turning, yet they yield not, and labour is beſtowed of them when they anſwer it not.

As for the labour of Ditching, a Man may, in one day, Ditch and Quickſet, of a reaſonable Ditch, three Foot deep, and four broad, a Rod or Pole, allowing ſixteen Feet to the Pole; and ſo leſs Ground of large meaſure, leſs proportionable to the ſufficiency of the Fence undertaken.

As for Hedging, If it be ſubſtantial and good, *viz.* five foot high, well bounded, thick ſtocked, and cloſe layed, two Pole or Rod in a day is ſufficient; but thinner and lower, then double or equivolent to a proportion.

Plaſhing and making Quick-fence, is another labour, which to well order, if the growth be high and well grown, you muſt lay it thick and cloſe, ſtrongly binding in the tops, turning the quick downward and inward; and of this a Rod a day is a good day's work: but if he plaſh it down, and only lay it along, regarding more thickneſs than comelineſs or order, then he may do as much more with eaſe: and indeed the care of fencing in incloſed Countries is one principal matter, for a good Fence once made and ſetled, ſaves a Man a great deal of labour and trouble.

As for Delving or Ditching, which ſome Grounds require, where Woods have been grubbed up, and not well cleared of the ſpreading Fibres of the Roots; then, of very difficult Ground, if it be to level, he may dig a Rod in a day: but if he dig very deep and trench it, or manure it, as is proper, then three parts of a Rod is ſufficient: for as ordinary delving requires but one Spade's graft extraordinary, to take up the heart of the Ground, requires much more.

CHAP. XXVII.

The Variation of Soil in the ſeveral Counties, requires different Meaſures to be taken in Agriculture, &c.

IT is proper, in this place, to be conſidered, that there is a variation in Huſbandry, according to the Country, and therefore there may be difference in Rules to be obſerved, in divers places, according to Air and Earth; and the greatneſs or ſmalneſs of the heat; or as moiſture and

and cold doth decreaſe or deminiſh: And to theſe muſt the Huſbandman tune his Seaſons, Labours and Inſtruments; for in ſtiff Clays, of which all the fruitful Valleys of this Kingdom are compoſed, as alſo in *Huntington-ſhire*, *Cambridge-ſhire*, *Bedford-ſhire*, and many others, all manner of Arable buſineſs muſt be begun early in the Year, and the Ploughs, and Inſtruments to be uſed, made of the largeſt ſize, the Timber ſtrong, and the Labour great and painful; ſo alſo in Soils that are mixed and very good and fruitful, as *Hertford-ſhire*, *Northampton-ſhire*, and moſt part of *Berk-ſhire*, *Eſſex*, and *Kent*, with other Counties of the like nature, Arable Labour ought to begin in the latter Seaſon, and the Inſtruments, and Ploughs, made of a middle ſize, and the Timber indifferent, and leſs Labour will ſerve, than in the former: But the light Sandy Grounds, having a natural fruitfulneſs in them, as *Surry*, *Suffolk*, *Norfolk*, and many parts of *Lincoln-ſhire*, *Hanpſhire*, &c. the Arable Toils may begin at the laſt Seaſons, and Ploughs, with Inſtruments, may be of the ſmaleſt and lighteſt ſize, the Timber ſmaler than the former, and the Labour leſs.

As for all barren unfruitful Earth, as in *Cornwal*, *Devon-ſhire*, many parts of *Wales*, *York-ſhire*, *Cheſhire*, *Lanca-ſhire*, and *Derby-ſhire*, and the like, the ploughing and ordering is to be in a fit Seaſon, according to the temperateneſs of the weather, which if it happen early, you muſt begin your Labour at latter Seaſons; and there is no true proportion to be given here for the Plough and Inſtruments, but they muſt be framed according as the Ground is ſtronger or weaker; and therefore rather follow Reaſon in theſe things, than Cuſtom, and then by experience you will find leſs labour, and better thriving.

CHAP.

CHAP. XXVIII.

What is required in Husbandry, in order to Oxen and Horses, for Tilling of Lands variously Situate, &c.

AS for the Office and Duty of a Husbandman, it requires great care and diligence, and therefore I shall speak something farther of it than yet I have done.

And first, to lay his Lands to his own profit, and the ease of the labouring Cattle; let him observe if his Arable Land shall lye against the side of any steep Hill, as mostly barren Lands do not, then plough such Lands directly against the Hill, beginning below, and so ascending upwards, if the assent be not very easie; for this will so weary your Cattle, and make them irksome, that they never go through it, if it be any thing considerable, and the beating and toiling them, will surfeit and spoil them; but on the contray, in such Grounds, plough it sideways overthwart the Hill, that your Beasts may tread on the level Ground, and so shall the Compost and Manure which is laid on, not be soon washed away from the upper part, because the Furrows not lying straight downwards, the washings of the Rain stop, and cannot descend, and so the Soil is kept in.

In the next place, it is a Husbandman's care, to know what Cattle are fit for draught, and the Tillage of his Ground; whether Oxen, or Horses, or both of them together: In cold stony mountianous Countries, Horses are preferred, though in most Counties Oxen are sure, and of great value in this Labour, as being steady, very strong, and sober in their pace, so that the Ground may be ploughed deep, and carefully; and besides, when their Labour is done, they turn to advantage by their Hides, Flesh, *&c.* But in many Counties, Horses are preferred, because they serve

ſerve for other uſes, not proper to thoſe, and endure Wet and Hardſhip better; and indeed in driving, if you make that ſpeed with your Oxen as you do with your Horſes, you will not only tire, over-heat, bruiſe and ſpoil them, but render them unfit for Labour or Feeding; but if you have a ſufficient Stock to keep Oxen and Horſes, put the firſt to plough near home, and keep them to their moderate pace only, and they will do well enough, and let the letter draw the Cart, or be uſed at the Plough where Expedition is required, according to the Roads or Ground, as the Countries lay, or the Faſhion uſed among your Neighbours, though I cannot conſent that Cuſtom is ſo much to be followed as ſome plead for, if it be diſonant to Reaſon and true Experience; therefore induſtrious Husbandmen try many ways, and ſtick to that which redounds to their beſt advantage.

CHAP. XXIX.

Proper Things to be obſerved, and done throughout the twelve Months in the Year.

THere is one thing more to be conſidered, in which a Husband-man ought to have regard to, and that is proper Seaſons of the Year for particular Labours, and theſe I ſhall briefly ſet down as far as they concern the preſent Diſcourſe.

In the Month of *January*, if you live in a good fertile Soil, among rich ſimple Clays, in the firſt place plough up the Peaſe-ground, that it may lye to take bait before it be ſown; but if in fruitful and well-mixed Soil, then in this Month; if the Weather be open, water ſuch Paſture and Meadow-Grounds as require it: Drain, and make dry Arable-Lands, eſpecially where you are to ſow Peaſe, Oats or Barley; the following Seed-time ſtub up the rough Ground you intend to ſow the Year following, and for your

your own Health keep warm your Body; feed on good wholſom Diet, and rather with Exerciſe than Sauce, whet, and encreaſe your Appetite.

In *February* ſet or ſow all ſorts of Beans, Peaſe, and other Pulſe; and the ſtiffer your Ground is, begin your Arable-Toil the ſooner; ForbearMents that are ſlimey; take heed of cold and plegmatick Humours, and if need, or any accident require, bath and purge; and if the Weather be ſutable, you may bleed, but not too laviſhly.

In *March* end the ſowing Seaſon of all ſorts of ſmall Pulſe, and begin Barley, Rye and Oats; the Rye muſt be that which is called *March* Rye. This Month, if neceſſity require it, you may often bath, but not bleed; unleſs it be upon Extremities; purge gently, and let your Diet be temperate and cooling.

April requires you to finiſh up your Barley Seed-time, and order your Ground for the Sowing of Hemp and Flax; cut down great Oak-Timber, that the Bark may the better riſe; ſcower Ponds and Ditches, and gather what Manure you can to your Lay-ſtall; lay your Meadows ſlight, and your Corn-ground; gather Stone from off the Land; ſet Oſiers and Willows to make good your Fences; caſt up Banks and Ruines for the repair of all decayed Fences; and, where Health requires it, purge, bath, or bleed; uſe moderate Exerciſe, which ſtirs the Humours in the Body, and cauſes a healthful Conſtitution, with the uſe of temperate Meats and Drink, which Nature longs after.

In *May* ſow Barley upon all light Sands and burning Ground, as alſo Flax, Hemp, and tender Seeds; Summer-ſtir your mixed Earths, fallow your ſtiff Clays, ſoil all light and looſe Sand: As for barren Earth, prepare it for Rye and Wheat, ſtub the Roots of Broom or Fern, Goſs or Furs, burn Bait; begin to fold your Sheep, carry out Manure, and bring home Fencing and Fewel; weed Winter-Corn, Cut all ſorts of Graſs either in Fother or Paſture.

For your Health uſe Drink that will cool and purge the Blood.

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In *June* carry Marle, Sand, Lime, and other Manure of any kind, to the Land; lay up ſtore of Fuel, ſhear your fatter ſort of Sheep early, cut rank low Meadows, and for Health be temperate in Diet.

In *July* take ſeaſonable Weather for your Hay Harveſt, for there is much Diſcomodity and Loſs in neglect; Summer-ſtir rich ſtiff Grounds; Latter-ſoil all looſe hot Sands; ſoil all mixed Grounds; fence up your Copices; graze your Elder Underwoods, and bring home all Field-Timber.

As for Health, abſtain from Bleeding and Purging, unleſs in neceſſitous Caſes; be not over-venerous, nor meddle not with Superfluity of ſtrong Liquors.

In *Auguſt* apply yourſelf to take the beſt ſeaſonable time for your Corn-Harveſt; Mow Rye, Wheat, Barley, and Oats, and be moderate in all your Diet; Labour and Exerciſe, for this Month is full of Diſeaſes very dangerous to Life.

In *September* cut up your Beans, Peaſe, and all other Pulſe, and put an end to your Harveſt: Manure your Wheat-Lands; ſow Rye and Wheat in rich and barren Grounds; Thatch your Stacks of Wheat; Thraſh Wheat and Rye, and order all your neceſſary Affairs abroad, that they may not be hindred by Overflowings, occaſioned by great Rains or falling Snows, or the breaking of the Ground into deep ways.

For Healths-ſake, this Month Phyſick moderately, forbear eating too much Fruit, eſpecially thoſe that are too lucious, leſt they infect the Blood, and create Diſeases; and be temperate in Meats and Drinks.

In *October* finiſh your Wheat-ſowing, ſcower Ditches and Ponds for Manure, plaſh Hedges, and ſet Quickſets; make an end of Winter-ridging, draw Furrows to keep dry by well-draining your new-ſown Corn, make ſtore of Malt.

For Health, take moderate Phyſick from a skilful hand; uſe moderate Recreation, and feed well on wholſom Diet.

In

In *November* it is proper to ſow either Rye or Wheat in very hot Soils; cut down all ſorts of Timber for Ploughs, Carts and Axletrees, and other Husbandry-Utenſils or Inſtruments; break all ſuch Flax and Hemp as is deſigned for Spinning and uſe in the Winter-ſeaſon.

For Health and Vigour, eat ſtrong wholeſom Meats for good Digeſtion; and, unleſs in extream caſes, there is neither need of Phyſician nor Phyſick; for all dangerous Diſeaſes are ſtill, unleſs Exceſs ſtir them up by Surfeits, and other Forcings of the good Conſtitution, and unnatural Temper of the Body.

In *December* begin to plough up your Ground whereon you only intend to ſow clean Beans; drain your Cornfields if it be open Weather; keep your Meadows indifferently moiſt, but not with deep Overflowings; provide good ſtore of Houſhold-Proviſions, and rejoice in the Labour of your Hands.

And for Health eat Meats that are hot and nouriſhing, and comfortable Liquors, and ſo you may bring the Year about with Profit and Satisfaction.

CHAP. XXX.

Utenſils and Tools neceſſary for the Husband-man, for Arable-Land, the Barn, Stable, Meadows and Paſtures, &c.

HAving proceeded to ſpeak of Day-labour, I think it not amiſs to ſay ſomething of Carts, Waggons, *&c.* that may facilitate ſome part of this Labour, in being well ordered and rightly applied: And to have theſe in good condition, obſerve the Ground and Ways they are to be uſed in, and the Weight proper to be drawn, and make them ſtronger or lighter, groſſer or ſlenderer; and obſerve the more upright, or ſquare the Spoaks are from the Nave or Center, the heavier the Weight leaning on that ſide preſſes on them; and therefore to evade that as much as

may be, they muſt be placed boughing in outward that the Wheel may appear ſomewhat concave, which will prevent it from any Slip or Wrench in Stoney, or other rough Ground that may occaſion any eaſie breaking; and the larger the Wheel is, the eaſier it moves, becauſe the Bond being more flat, with greater facility it paſſes over any Stones or Hardneſs, where Jumpings, when laded, may endanger; and a Wheel of eighteen foot circumference rids as much Ground in one Turning, as one of nine does in twice, moving ſlowly on the Axletree; ſo that it rarely wears it as the leſſer do, and carry the Load with much more eaſe, though the lower the bed of the Cart is placed, the better the Load is ſecured from over-turning.

Beſides Carts and Waggons, there are Tools and Utenſils proper to be inſerted, though not unknown to thoſe that trade in Agriculture, *&c.* yet I ſhall here inſert them in their proper places, to be the more ready at hand: As, firſt,

Belonging to Arable and Field-Land.

Harrows, Drags, Forks, Sickles, Reap-Hooks, Weed-Hooks, Pitch-Forks, Rakes, Plough-Staff and Beetle, Sledges, Rowlers, Mold-Spears and Traps, Cradle-ſides, Seed-Lips.

Belonging to the Barn and Stable.

Ladders, Flales, Winnowing-Fans, Corn-Meaſures, Sieves and Rudders, Brooms, Sacks, Sekeps or Scutles, Bins, Pails, Curry-Combs, Main-Combs, Whips, Goads, Harneſs for Horſes, and Yoaks for Oxen, Pannels, Wanteys, Pack-Saddles, Sirſingles, Cart-Lines, Skreens for Corn.

Belonging to Paſtures and Meadows.

Rakes, Scythes, Pitch-Forks, Prongs, Fetters, Clogs and Shackles, Cutting-Spades and Hooks, Horſe-Locks, with others of leſſer note, with which a Husband-man ought to be furniſhed at need.

CHAP.

CHAP. XXXI.

To preſerve your Grain, when ſown, from all ſorts of Vermin, who are apt to deſtroy or annoy it.

HAving ſaid ſomewhat of bringing Ground to bear good Corn, as alſo the Methods of Sowing, eſpecially barren Grounds, for that which is fertil has not any occaſion to be treated of, but in ſome particular reſpects, which in the courſe of this Book will be laid down apart; it will now be highly neceſſary to inſtruct you how to preſerve your Grain, and, in the firſt place, from the Deſtroyers of it before it ſprings up, *&c.* Rooks, Crows and Daws, are great Devourers of Grain; to keep theſe from your Land, ſhoot ſome of them, and hang them on Poles in divers Angles of your Field, ſtick their Feathers along the Ridges of the Land, lay Trains of Gunpowder, and blow the Powder up, or let it lye ſcattering in the moſt frequented places, and the Scent of it will make them, with a little Shooting, forſake the Field: You may alſo take great numbers of them by placing ſtrong thick brown Papers twiſted taper-wiſe, like thoſe on Sugar-Loaves, in holes of the Earth, the broad top coming even with the Ground; Bird-lime the inſide, and ſcatter ſome Grain in it, and then the Fowl putting in its Head to take it out, the Paper ſo limed will ſtick cloſe and riſe with him, when being blind-folded, in amaze he will fly up a great height and fall down again; ſo that if you be at hand, he may be eaſily taken: The ſcattering *Nuxvomica* mingled with Paſte, if taken by them, as it ſeldom miſſes, will make them ſo ſick that they will forſake the Field; if you Lime your Corn, they will forſake it; if it be ſteeped in Water wherein Wormwood has been much boiled or infuſed, or ſprinkle it with the Dregs of the bitterest Oil, it will do the like, by making them caſt it up ſick, and

not covetous of any more; and theſe, with hanging Bunches of Feathers on Lines or Sticks, that they may dangle and twirl in the Wind may, in a great meaſure preſerve your Grain; and this latter may be as well when the Corn is ripe as before: And theſe I give you as general Rules for Pigeons, and all other Devourers of Grain, relating to Birds, tho do what you can they will come in for ſome ſhare with you.

Piſmires are another great Devourer of Corn, and will carry or bite off Chits or Sprouts, ſo that it will never grow, but rot in the Ground a great quantity: To prevent this, ſearch your Corn-fields well, eſpecially under the Hedges, and the Roots of old hollow Trees, or on the Tops of Hills caſt up; and if you find them there, pour Limed-water ſtrong and hot amongſt them, preſently after Sun-ſetting, and it will deſtroy them; for want of Lime make a Lye of Wood-aſhes, and it will do the ſame, though not ſo effectually.

There are another ſort of Corn-Devourers, called *Dores*, great black Clocks or Beetles, which lye under the Clods, and in Sprouting-time do great miſchief: To deſtroy theſe, make great Smoaks in your Fields in a ſtill Night, or a little breathing Wind that may carry it over the Surface of the Ground, with wet Rubbiſh or moldy Peaſe-ſtraw, Hay, or the like, and it will either kill them, or chaſe them from your Ground, for they are the greateſt Enemies of all others to Smoak, and can leaſt endure it; and if your Ground be Limed, or you ſow Lime among your Corn, you may ſpare this; for if they bite where the Lime has touched, it kills them.

Field-Rats and Mice, alſo Water-Rats, deſtroy much Grain: To prevent this, and ruin them, find out their round holes when the Field is bare, and put Hemlock-Seed into them, and eating it will kill them; the ſprinkling of the Juice of Hellebore in them, will do the like; but above all, I approve to beat the common Graſs very ſmall, mix it with a little Coperas, Vetriol, and Coarſe Honey, make it up in Pellets, and ſcatter it in their Haunts, in the mouths of their holes, or the moſt likely places, and the Scent will greedily draw them to it from all parts, and, once eating it, they will die: This may be

alſo uſed in Granaries or Barns for other Rats and Mice, with good ſucceſs.

Slugs and Snails do much harm to Corn, and Peaſe juſt ſprouting up: To kill theſe, the beſt thing is Soot or Lime ſprinkled thinly over the Ground, for touching it they will die.

Graſhoppers in ſome meaſure do much Injury, by feeding on the Leaf and Bloſſom of Corn and Pulſe, from the earlieſt to the lateſt: Theſe are hard to be deſtroyed without very great labour, and that is by ſprinkling the Corn with Water wherein Wormwood, Rue, or Centaury, has been boiled, till the ſtrength of them are quite taken out by the Water; and if they bite where the Sprinklings happen, they will die, and the Scent of any bitter thing is ſo offenſive to them, that they are never found where any ſuch thing grows.

Moles are two ways deſtructive to Corn, *viz.* in eating the Roots, and rooting it up, not making diſtinction of any ſort, but taking all alike: There are divers ways of taking them, but not ſo eaſily when the Corn is well grown, for then they do their chiefeſt mitchief, when their Tracts, or the Caſting up of their Hills cannot be ſo eaſily diſcovered: However, you muſt do it as well as you can, and when you ſee them caſting up, or moving in their Tracks, ſtrike them with an Iron of many Spears; or dig Pits in their Tracts, and ſet earthen glazed Pots, which they will blindly fall into, and cannot ſcramble out; or fill a earthen Jugg with Pitch, Roſin and Brimſtone, with ſome looſe Tow or Rags, and, firing it, clap the Neck to the mouth of the hole, and the Air in the Earth, drawing the Scent to a great diſtance, will ſtifle them; or mix the Juyce of Hellebore with Rye-meal, ſcatter little bits in the Furrows, and finding it in their way, they will greedily eat it and die.

CHAP. XXXII.

To prevent Smuttiness in Corn, preserve it against Blasts; the Injury of Black Frosts, Snow-water, Mists, and how it is to be ordered when reaped wet.

THere are other Mischiefs that befal Corn, though not from living Creatures, which I have laboured to find some suitable Remedies for in the trying many Experiments.

To prevent the Smuttiness and Mildew, before you sow your Grain, sprinkle the Ground over lightly with Chalk beaten very small.

Against Blasts, the propereſt Remedy is held, (observing the Season when they usually happen) to make Fires of Stubble or rotten Straw, and burn in them the Snips of old Leather, the Shavings of Horn, and a little Brimstone, so advantagiously on the sides of the Ground, that a small Gale of Wind may carry the Smoak, and spread it among the Corn or Pulse. This will likewise destroy Flies; and other Black Frosts are very injurious to all Grain, the piercing Cold chilling or killing the fertile Heat that propagates the Growth, and either withers or stints it if it be extream, and without Snow: To bed it, and keep off the bleak Winds, there is no better Remedy against this than to strow Ashes over your Land, either Wood or Sea coal; and they add much Heat to it, and keep off a great part of the Cold; some throw rotten Straw over it, but that proves a great Incumbrance; the other nourishes the Ground, and is good Manure for barren Earth.

As for Snows lying on the Ground, it injures not the Corn; but upon Thaws, the Water being of a harsh Allomy nature, much injures the Roots if it lie long upon it; and the

the beſt way to prevent it, is to lay your Lands high, your Furrows deep, and to have ſuitable Drains to the Lowneſs of your Ground, to drain it away as faſt as may be.

Miſts and Fogs are very offenſive, where they are great, or riſe from ill-ſcented Grounds, eſpecially from Fens, Salt-Marſhes, Standing-Pools, Lakes, &c.

The way of remedying this evil is to ſmoak the Land in the Evening with any ſort of Fuel that caſts a groſs thick Smoak, which will in ſome meaſure diſperſe and dry up the Vapour that would otherways, by falling on it, be poiſonous and offenſive to the Corn.

Of Corn reaped wet, there comes great damage; for being ſo by Rain, and not time given it to dry abroad, or by the Unripeneſs, or too Greenneſs of it when mowed, if the Heat be great thereby contracted, it often ſets it on fire; if leſs, it moulders, rots, or moulds the Straw and Grain, that it is of little or no value: You may know when the Corn is ready to reap by the much bending of the Ear, drineſs of the Stalk, and hardneſs of the Grain; then if you ſee any Weeds growing up among it, that are but of a moderate height, reap it as ſoon as you can to take in the leſs Weeds, or the Seed of them to encumber or worſen it: If Graſs be grown high among it, and you cannot avoid reaping it with the Corn, take care to ſpread it thin before you ſheave it, and dry it well in the Sun till it wither and become as Hay very dry, and then ſheave it up, and ſhock it in ſmall Shocks; then when it has ſweat a little open it, and give it the Sun and the Air, that it may yet be more dry; then lay it in greater Shocks, and let it ſweat again, and ſo open it, and when it is by this means well opened and dried, Inn it; but ſometimes Rain or great Miſts, cauſes a Weakneſs; if it be before the Reaping, let it ſtand ſomewhat longer in Expectation of a favourable Seaſon; but if your Expectation be fruſtrated, and by the abundance of falling Rains the Corn is likely to be beaten down, grow again, or rot, you muſt make a Virtue of Neceſſity, reap it, carry it home, and having aired and dryed a little under ſhelter, you muſt have Kills to dry it, often turning and ſhifting the Sheaves; and when it is dry, let it cool well, and mow

it up lightly that the Air may come plentifully amongſt it, leaving for that purpoſe a hollow in the middle of the Mow and underneath, and ſo it will be kept good and ſweet.

CHAP. XXXIII.

Proper Directions for Stacking of Corn in the true Method, to keep it from Vermin, Fowl, Taking-Wet, or Muſting.

WHere there is not a Conveniency of Houſing, there is a neceſſity of Stacking Corn, and care muſt be uſed for the well-ordering of it this way, that it may be preſerved with the leaſt loſs, alſo from Wet and Moulding; for a moiſt Ground, if the Stack be unadviſedly placed on it without any other Remedies, will ſpoil at leaſt a yard of the Bottom; and therefore you muſt make and raiſe your Ground on purpoſe with Gravel, Sand and Pebles, or other Stones not ſubject to breaking, proportionable for a Stack, either round or a ſquare, or triangular, diſtant from Eves-dropping, or the Diping of Trees; and ſo that the violent Winds cannot blow the Rain, or Melting-Snow off from them (though they ſtand at ſome diſtance) upon the Stack; yet ſo that it may ſtand ſafe ſheltered from high turbulent Wind, that would ariſe or uncover it; then, upon the Earth ſo rais'd above the Level of Water, occaſioning Overflowings by ſudden Showers, make four pieces of Stone or Timber like Blocks, broad on the lower-end and narrower on the top, of equal height about two foot and a half, and fix the lower-end a little in the ground, that they may ſtand ſteady; then lay on their tops ſquare Boards two inches thick, and three foot ſquare every way, ſtrong and ſubſtantial, well-ſeaſoned, and free from warping; then take ſtrong Overlays of Wood, and lay them from one Board to another four-

four-ſquare, and on theſe place other ſmaller Poles cloſe in a manner to each other; and upon this Frame ſtack or mow your Corn, Peaſe, Beans, *&c.* as near for conveniency to the Thraſhing-Flore as may be; make the Stack neatly compacted and upright, which Experience rather than Printed Directions muſt inſtruct you in; and you will, if you be a little careful in it, ſave much Corn, for the broad Boards at the Corners will ſend off the Mice by their hanging ſo much over the Stumps or Blocks, and the height, together with the Poles, will prevent the Moiſture from injuring it any ways from the Dampneſs of the Ground.

As for your laying your Corn into Stack, obſerve to turn the Eary-part of the Sheaves inward, and ſo the Pigeons, Sparrows, *&c.* will be diſappointed: And of all Proportions of Stacks, I commend the round for the beſt; and when it is made, after ſome days ſetling you muſt Thatch it well to keep out the Wet; and when you ſtack your Wheat, let the top be Oats, or other coarſe Grain, and ſo it will lye in greater ſafety from Wet, the top being ever in moſt danger to receive Damage: Fence it about with ſmall Poles, that Cattel come not to damage it; and if your Stack be very long, you muſt have more Pillars to ſupport it, as ſix or eight.

CHAP. XXXIV.

To know waſhed Corn, and how to lay up and keep it to the beſt advantage, all uſeful ſorts of Grain in Granaries, &c.

THere is a ſort of Corn, though it may be good enough for Grinding, is altogether nought for Seed, and throws away the Husband-man's Labour and Charge in ſowing it, becauſe it will not proſper, if at all it ſprout up; and therefore I think fit to give a Caution in this caſe, that knowing it, it may be avoided; and this is

that which is called Waſhed Corn, ſuch as grows in the middle of the Ear when the reſt is ſmutty; and being thraſhed out with the Smuttineſs about it, is blackned, and ſo not fit for the Market till it is waſhed clean.

(1.) To know this from other Corn, take up a handful, and if it look clear, bright, and ſhining, without Change or Difference of one entire colour, then it is good Corn, and not waſhed.

(2.) If at the ends it looks whiter than in the middle, and the Whiteneſs be a darkiſh muddy colour, and not ſhining, there being a changeable colour in it, then it is Waſhed Corn, and not fit to be ſown.

(3.) If you put a few Grains of it in your Mouth, and in chewing the Taſte be ſweet and pleaſant, alſo mellow and gentle between your Teeth in the chewing, then it is not waſhed; but on the contrary, if it have a bitteriſh or flaſhy raw Taſte, gritting or grinding hard between your Teeth with a Roughneſs, then it is Waſhed Corn; alſo when Corn is more than ordinary dry or moiſt, thoſe are ſigns of Naughtineſs for Seed, though not ſo bad as the former, ſhewing either imperfection in the Corn, or in the keeping of it; for good Corn ever holds an indifferent temper between Moiſture and Drineſs: And theſe things ought mainly to be conſidered, becauſe it is not only the loſs of the Seed, but the Expences and Diſappointment.

There are other things very materially to be conſidered; as firſt, The well-keeping of Corn, which is twofold, *viz.* in the Ear, and out of the Ear: As for the firſt of theſe, I have deſcribed in the manner of Shocking, Drying, and Stacking; and for the ſecond, it is the moſt material, when it is thraſhed out, and well dreſſed, by ſevering it from the Chaff, Cockle, or any offenſive Seeds of Weeds growing up among it; and in this caſe your Granaries, or other places of keeping it, muſt be conſidered to be made ſundry ways, according to the Cuſtom, or rather Nature of the Country: Some are made with Clay, ſome trodden with Straw and Hair, the former chopped ſmall, and ſuch like: But theſe I like not, for they ſoonеſt corrupt the Corn; for, notwithſtanding their Warmth,

Warmth, which is a Preſerver, they however produce ſuch Duſt as produce Mites, Weavels, and other Vermin, Deſtroyers of Corn, ſo that they make it eaſily rot.

Others of Stone and Lime are ſubject to Sweatings in wet Weather, and by the Moiſtneſs corrupt the Corn.

Some again are made of Lime and Brick, and theſe indeed are very good to prevent the coming or breeding of the Weavels, and other ſmall Vermin; but the Sharpneſs of the Lime is unwholeſom for all ſorts of Grain.

The beſt then that I can adviſe to, for the keeping of all manner of Grain, is that made of Plaiſter, burnt and brought into a Mortar; ſo that by the working of ſmall Stones into the midſt of it, the inſides and outſides may be ſmoothed with the Plaiſter, the Stones being hidden at leaſt two fingers thick on each ſide, and all the bottom is proper to be plaiſtered, it being the beſt of all Flores for the keeping of Corn of any ſorts: Place theſe kind of Grainaries as near as you can to the Air of the Fire as may be convenient, for the Plaiſter is very cold, yet it is ever dry, and ſo free from Moiſture, that no change of the Air alters it in that particular; but it always keeps the Corn in one ſtate of Drineſs and Goodneſs, and the warm ſtanding of it in Winter is ſuch a Comfort, and the natural Coldneſs of the Plaiſter in Summer, that it temporizes ſo well, that I can conceive nothing better for the preſerving of Grain.

Where this Conveniency is not, or at leaſt you will uſe Hutches, Bins, or dry Fats, and the like; they muſt, if fit for uſe, be made of dry or well-ſeaſoned Oak-boards, very plainly ſmoothed, cloſely joyned, and glewed together, with Leds and Covers made very cloſe, to prevent as much as may be the Coming in of the Air; but the principle uſe of theſe are to keep Malt in after it is dried, or Barley to be ground, or feeding Cattel.

To preſerve Wheat the beſt way, that it may be free from defects, Reap it in ſeaſonable Weather, at the Change of the Moon; Thraſh, Winnow, and Dreſs it as clean as you can,

can, then lay it in the Plaiſter-Lofts, or Granaries deſcribed; ſpread it about a Foot thick at the uppermoſt, and ſo let it lye; and, at the end of four or ſix days at the moſt, turn it well with a large wooden Shovel, and it will keep ſweet, ſound, and good-conditioned, ſo that the heat, ſweat, or coldneſs, cannot offend it; the firſt being cooled and tempered by the opening, and the ſecond dryed up by the Air, that has free acceſs to it; and thirdly, it is refreſhed by the toſſing it up and down.

To preſerve Rye, or Maſſin, or, as ſome call it, Muck, or Blend-Corn, being a mixture of Rye and Wheat; as for this ſort of Grain, or for Rye alone, that which preſerves the Wheat will preſerve the Rye; for they are Grains of like nature, only the Rye is ſomewhat hotter and dryer, and will continue good in moiſter places, and therefore the Plaiſter-Floors, with often turning, is the propereſt to preſerve it: It will alſo do well in cloſe Hutches, or in the Pipe, or Dry-Fat; but being once opened, and the Air freely entring among it, exceept it be ſoon ſpent, it will putrifie, or taint.

To preſerve Oats after they are thraſhed and dryed, put them into a cloſe Graner, or Cask, free from moiſture, and they will keep many Years; and Oat-meal is preſerved the ſame way, though it is proper it ſhould, if poſſible, have ſome air of the Fire; for the warmer it ſtands, the longer it will continue ſweet and good.

As for the well-keeping of Meal, let it lye about a fortnight in the Bran before you bolt it, and then you will have near half a Peck in a Buſhel more, than if you had boulted it as ſoon as ground; put it then in dry, and well-ſeaſoned Casks, tread it in by degrees as hard as you can, head it cloſe from the Air, and when you take any out, let no more be taken out than what you preſently uſe, and ſo it will keep well a long time; but if it has come by Sea, or in rainy damp weather, then lay it abroad on Sheets, and air it, and it will keep it ſweet, and a little tainted, reſtore it.

To preſerve Peaſe, or Fetches, which of all other Grain are moſt ſubject to rottenneſs, and imperfection, being of their own nature apt to breed Worms, Weavels, or Mites, through

through the too much ſweetneſs of the Kernel of the Grain; to keep them then long and good conditioned, dry them either in a Kiln, or the Sun, eſpecially thoſe you uſe for Diet, or Provinder, and lay them in Graners or Floors that are dry, and they will laſt ſound and good a long time, and not be ſubject to any corruption, or breeding Inſects; lay them in thick heaps, and ſo they will be preſerved moiſt the longer time; for if they be too much dryed in the Air, by lying thin, it takes away part of their ſweetneſs and goodneſs.

Beans is another Commodity very neceſſary and uſeful in this Nation; and therefore among others, the well-keeping and preſerving them ought to be conſidered: Theſe are more groſs and fat than any I have heretofore ſpoken of, and by reaſon of the fulneſs of their ſubſtance, more ſubject to moiſture, and ſuch damp humours as corrupt them.

It is not therefore the beſt way to Thraſh any more then what are for preſent uſe, till the middle of *March*; at which time, they having kindly ſweat in the Mow, or Stack, and become dry and hard, not apt, without bad keeping, to relent again, then keep them either on plaiſter, or boarded Floors, or well-made earthen ones, the ſpace of twelve days without toſſing or turning; lay them as thick as you pleaſe, for being once well dryed, they will not relent; or you may put them up in Barrels, eſpecially ſuch as have had ſweet Oyl in them, and they will make them excellent good for the uſe of the Kitchen, if they be cloſe covered and kept dry, by reaſon of a certain mellowneſs that will be infuſed into them, and they will keep as many Years as you would have them.

To keep and preſerve all ſmall Seeds of any nature or quality ſoever; gather them as ſoon as they are ripe, in a clear Sun-ſhiny Day, dry and wither them in the ſhade, keeping the Sun and moiſture from them, then bind them up in bundles without thraſhing, hang them up, and keep them in their own Cods, and they will laſt good a full Year.

In preſerving of Lentils, or Lupines; lay them together on a boarded Floor, in large, broad and flat heaps, two Foot,

Foot, or two Foot and a half thick, ſprinkle them with Vinegar and Laſarpitum, and not any change of Weather, or Vermin will do them hurt, and they will keep many Years; and although theſe are ſeldom uſed for humane Food, yet are they very profitable for the well feeding of Horſes, Swine, and other Domeſtick Cattle, making them ſooner fat than any other ordinary Pulſe; they are alſo phyſical and good for many Medicines for remedying Diſeaſes in Cattle, and the longer they are well kept, the more is their virtue; and therefore they ought to be well eſteemed among other Grain or Pulſe.

CHAP. XXXV.

How the beſt way to plant and order Hop-Vines, to a great Encreaſe and Improvement of Land.

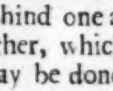
SInce Hops, (though formerly not eſteemed, but accounted as a pernicious Weed) have in the latter Ages gained a general eſteem, and barren Ground may be greatly improved by them, it will not be amiſs to beſtow one Chapter in this Book, in directions how they ought to be ordered and improved to the beſt advantage.

Conſider then, that this Plant is very tender, and will not thrive to any advantage on too rich, or too poor a Ground; for in the firſt they grow up to rankneſs, bringing forth only Leaves and no Bells; in the ſecond, very few Leaves or Bells, dwindling and coming to nothing.

If you have no other conveniency but the firſt, you muſt allay the fatneſs of your Hills by mixing Chalk with the Mould; or ſmall Gravel, if it be hazle, or mixed Mould; and if it be ſtiff Clay, then with good ſtore of red Sand; for any of theſe, in a little time, will leſſen fertility.

But if the Soil be not of either of theſe, but extream barren, then obſerve whether it lies high or low, or by any means ſubject to overflowings; if they be great, then is it unfit for Hop-Grounds; but moderate flowings may be

be averted by ſmall Drains made through the Alleys, when the banks and hills are raiſed, convey the Water unto the lower Grounds, whereby it may not continue long, to ſoak and hurt the roots of the Plants; and where your neceſſity obliges you to chuſe ſuch Ground, you muſt raiſe your hills a great deal bigger and higher, that the overflowings, when they accidentally happen, may not exceed, in their riſing, above the middle of the Hill, and ſo not ſend much wetneſs to the Root; and the Water not ſtaying in the Alleys, but taking a ſwift current and draining through the Alleys will bring much fertility to the Land; but when you have eaſed your Land of theſe particular faults, the general one is Barrenneſs, and this is alſo to be removed, that it may be brought into a good and ſuitable temper; and therefore about *Michaelmas*, having caſt up your Hills, and made your Alleys ſuitable, of four or five Foot breadth between hill and hill, not leting the hills



ſtand directly behind one another; for ſo one overſhading another, which is a great annoyance; but it may be done according to this Figure, where there is a ſufficient largeneſs of place, and ſuch a convenient paſſage, through which the Sun may come, at all convenient times, to refreſh the Plants, and make them proſper well.

The Ground being free from Water, it may be raiſed about two Foot and a half, and the compaſs anſwerable, neither too big nor too little, but ſhaped like a Sugar-loaf; yet ſo on the top, that the hill may be flat a little, to retain the Rain, or the thick Dews that falls upon it moderately, but ſhoot off the great abundance.

Make not the hills intirely of one Mould, but a third, or better of ſuch Earth as you ſhall dig up under Dung-hills, and a little Soap-aſhes drained from the Lye, and by mixing them together compound your Hop-hills; but if theſe are difficult to be got, ſufficient for your purpoſe, then a third part of theſe, and two parts of natural Earth may be ſufficient for your purpoſe, though the firſt is better; however it muſt then be renewed in three or four Years, or the ſtrength of it will be loſt: When your hills

are

are made, pare up the green Swarth in the Alleys, about four fingers thick, and with it cover the outſide of your hills almoſt to the top, turning the Graſs-ſide next to the Earth of the hills, that rotting there, it may add to the manuring and and keeping them very warm; let there be ſo much ſpace on the top of the hills as may contain the Plants, and the Poles that ſupport them; only then, if the conveniency of getting it admit, take dryed Fern and ſpread it in the Alleys of a pretty thickneſs, ſo that rotting in the Winter, it will much comfort the Hill, and be good Manure againſt the Spring, which being then caſt about them, will very much ſtrengthen them, and make the Plants proſper.

The Hills being thus manured and caſt up, open them at the top with a Setting-ſtaff; crumble good Mould in, to lye looſe at the bottom, and then put in the beſt Hop-Plants you can get, in every Hill, at the leaſt four, being well prepared; putting them deep in the Earth, and covering them all over, at leaſt four fingers thick; and if the Earth you cover them withal be mixed with Ox-blood, and a little ſlacked Lime, it will not only give much comfort to them, but preſerve the roots from Worms and other Virmin.

Your Hop-ground being thus fitted, and planted in the Month *October*, which I account the beſt Seaſon, let it reſt till *April*; and when the Vines of your Hops come out of the Ground to a pretty length, then ſet up your Poles long and ſtraight, of any convenient wholſome Wood; and in doing it, obſerve that in putting them into the Ground, and faſtening them, you do not hurt the roots of the Hops; and when they are put into a depth, that they may ſtand firm, ram the Earth hard about them; and in the next place obſerve they are planted at that diſtance, that the Sun-beams may eaſily come in between them, and there be no overſhadowing; this by a little practice may be perfected, and turn to great advantage: As for the number of Poles to be placed on every Hill, they muſt be anſwerable to the Vines that ſpring up; and you muſt twine the tendrills about them, ſo that growing up, they may of themſelves wind and take faſt hold, not leaving

any

any to creep on the Ground, for they turn to no advantage.

As for weeding Hop-grounds thus manured, there is little occaſion for it, by reaſon the manure will deſtroy the Weeds; but if in deſpight of this any ſprout, to annoy the tender ſcions, you muſt cut them, or pull them up by the roots, as in other weedings; and with this care, barren Ground will yield a vaſt advantage: However, before I end this Subject, it will be proper to tell you how to preſerve them from Vermin as well when they are grown up alſo.

CHAP. XXXVI.

How to order Hop-Vines, gather and dry the Hops after the beſt manner, &c.

IF when the Vines riſe on the Poles, any of them happen to break looſe, you muſt twiſt them again towards the Sun-riſing as much as may be, and thoſe that mount above the Poles are accounted for the beſt; and if you perceive the Flies, or any other Inſects to bite and afflict them, ſprinkle the Vines with Water wherein Wormwood has been well boiled, and it will preſerve them: In exceſſive hot weather, water the Hills about Sun-ſet, and continue it, if no Rain fall, till they Blow, which will be about St. *Margaret*'s day, and at *Lamas-tide* they Bell.

When you obſerve them to turn colour, ſome ſooner then the other, pull them though they be not ripe, leſt they ſhed and come to nothing, as having met with ſome blaſt, or other defect; but when they naturally do ſo, and in a full Seaſon are ready to pull, make a plain place in your Hop-ground, as near to the Hills as conveniency will permit, then cut the Vines cloſe to the bottom of the Poles, bring them away, Poles and all, by cutting of the intanglements one with another with a hooked Knife at the end

end of a long Pole, and lay them down in order for thoſe that are to gather them, to pick off the Bells, which muſt be done with much celerity, not ſuffering them to ſtay long unpulled, either in Rain or Sun-ſhine.

During the gathering, prepare your Kiln, heated with Straw, or ſmall dry Wood, and ſpread them on it in ſuch good order, that they may eaſily dry, which you may know by their bitterneſs, or crumbling between your Hands; however never permit them to continue on the Kiln more then twelve hours, and keep hot your Kiln night and day, till your whole gathering is dryed, and, taking them thence, let them lye on a Floor a Day or two, to give, before they are ſacked, or bagged up, or elſe they will ſhed their Seed, wherein the greateſt virtue lyes, and alſo the Leaves be apt to crumble and break off.

The Vines being cut away bare, and the Roots to the middle laid open, ſhake a little Mould mixed with Horſe-dung, and let them continue ſo all the Winter; and in ſo ordering, an Acre in a Year that hits, which is certainly every third, will yield 1200 weight of Hops, and treble the charge you are at.

CHAP. XXXVII.

Flax and Hemp, good Improvers of Land. How to Manure the Ground for them, Sow, and Order them.

THere is great Improvement to be made on barren Land, by manuring it proper for the well-growing of Flax and Hemp, Commodities ſo uſeful and very profitable to this Nation: And for theſe you muſt, however, chooſe proper Grounds; for there are two ſorts that naturally refuſe to bear theſe, *viz.* The rich, ſtiff, black, tough, and ſollid, faſt Mould, whoſe extraordinary fertility, gives ſuch an overplus of ſurcharge to the Seeds increaſe, that either, through rankneſs, it runneth all into Bun, and has lit-

little or no Rind, or else the Seed being tender, the Sod and heavineſs of the Mould buries it, that it labours in vain to get out.

The other oppoſite to it, is the moſt extream barren Ground, which will not bear this, nor any good Seed; and of theſe I propoſe to treat, for ſuch as will naturally bear them, I need not ſpend time upon.

As for the firſt of theſe then, though it is very good for Corn, yet for Hemp and Flax, it muſt be reduced; and to begin to do it, plough it up with a ſtrong Plough, fit for ſuch Ground; and about the middle of *May*, if the weather be ſeaſonable, and the Ground not too hard, ſow the Seed: If it be hard, you muſt wait for ſome gentle Showers, ſo that the Earth being mollified, then hack it after ploughing, and break the Clods in ſmall pieces, then if you can get any ſalt Sea-ſand, ſand it plentifully over; but for want of that, ſand it with the beſt red Sand you can get; and upon every Acre ſo ſanded, ſow three Buſhels of Bay-ſalt, then plough it again, to mix well the Sand and Salt together; and this laſt ploughing is proper a little after *Michaelmas*, and then let it reſt till Seed-time; and then ploughing and hacking over the Ground, ſow it either with Hemp or Flax, as you think is moſt for your advantage; harrow it well into a fine Mould, and clot it with a Clotting-beetle; then, after the fall of the firſt great Shower, run it over with the backs of your Harrows, laying an indifferent weight upon them, to keep them cloſe to the Ground, that they may break the ſmall Clumpers, and ſmooth the Earth. If it be ſown with Hemp, it need not be weeded at all, becauſe this will out ſtrip and choak them; but if with Flax, or Line, being a much tenderer Seed, bringing forth many more tender leaves and branches, then obſerve how the Weeds ſpring up, and pluck them away till the Flax is well ſprung, and then it will conquer them, and not be overgrown by them.

As for the worſt ſort of Ground, you ſhall dreſs it as you do the clayey barren Ground, I have mentioned Chap. ------ beginning at the time of the Year there appointed; or indeed, if urgent occaſions detain you from it, you may plough it up about *Michaelmas*, and ſo let it reſt

reſt till *March*; and that being the proper Seed-time, plough it again, and manure it as the Clay-ground; hack it, and if the Earth be rough and ſtiff, harrow it before you ſow it, that the Earth may be ſmall, and as level as poſſible, breaking the Clots, if any remain, with your Clotting beetle; then, after the firſt ſhowers have well moiſtened it, go over it with an even, but very weighty Rowler, treading the Ground as little as may be, and the ſwifter it is drawn the better it will crumble the Ground under it.

As for Weeds here, you need not much trouble yourſelf, for the Earth purpoſely thus ordered, is an enemy to them, and will not put forth any; nor ſhall you have any trouble in dreſſing it above once in eight or ten Years; nor plough it after the firſt Year, but at Seed-times. If you can get with Drags, or Engines, the broad, black-leaved Sea-weed, called *Ore-weed*, growing in great tufts, abundantly about the Sea-ſhore, cover the Land with them, and ſo plough them in, as they may be buried to rot in the Earth, and they will be excellent Manure, giving much ſtrength and heart to the Ground.

CHAP. XXXVIII.

To order Hemp and Flax, when Ripe, in many reſpects, to the beſt advantage.

HAving thus treated on Hemp and Flax, as to the Sowing it to profit and advantage, not to omit my former method, I have thought fit to ſpeak ſomething briefly as to the ordering it when ripe, and gathered, as to the manner of rendering it uſeful.

Flax, when grown up to ripeneſs, is known by the yellowneſs and ſwelling of the Seeds on the top, at which time gather it, and bind it in little bundles, ſetting it in the Sun to dry, that the Seeds may fall out into a convenient place to gather up; and keep them for uſe, *viz.*

Either

Either for Sowing, feeding Birds, making of Medicines, Oyl, &c. And if they fall not out ſpontaniouſly, you muſt rake them out with an Iron Hatchel, or by beating with a Pole, Carding, or the like.

When you have done this, and the bundles are well dryed, lay them in Water, and keep them from floating, by preſſing them down with weights, and when you perceive the wet has made the Rind very looſe, conclude them to be ſteeped enough; then take them out, unbind the bundles, and dry them in the Sun again, then peel off the Rind, and hatchel it on an Iron Hatchel faſtened to a Block with many long Iron Teeth, and beat the Stalks till they become looſe and pliant, ſo that they may in dreſſing, be drawn out into fine ſhort threads, and dreſs them as the Rind, though upon finer Combs, or Hatchels; having for this purpoſe ſeveral degrees of them, as to fineneſs, anointing the Spikes, or Teeth, with Oyl, that they may ſlip the glibber; and ſo you may bring it fit for uſe in making Linnen-Cloth, &c.

Of Hemp there are two ſorts, Male and Female, the firſt bears no Flower, but a Seed of divers Colours; the latter bears a Flower, the Stalk is full of knots, out of which, proceed many branches, ſharp, jagged, or indented; the Roots of this deſcends into the Ground a very conſiderable depth, and therefore it requires deeper ploughing than the former, it growing very faſt, and a prodigious height, in ſome Countries twenty or thirty Foot, and by reaſon of the dryneſs of its nature, requires Water at the Roots, or to be Sowed in ſomewhat a moiſt Ground; proſpering the better, the thicker it is ſown, and may be ordered and dreſſed, in all reſpects, like Flax; being very ſerviceable to the Nation.

CHAP.

CHAP. XXXIX.

How to plant and order Saffron for the improvement of Land, &c.

SAffron is not the leaſt to be conſidered for the improvement of Ground, and is of excellent uſe in Medicines for comforting the Heart, and expelling all ill Vapours that have Death for their attendants, if not timely removed; and therefore, if for no other reaſon, it ought to be planted, cheriſhed and improved: but there are others, for it brings great profit to the induſtrious Husband-man, greatly recompencing his labour, if care be taken about it, as thoſe in *Suffolk*, *Eſſex*, and *Cambridge-ſhire*, where it grows in abundance, experimentally find.

It will grow upon indifferent Ground, with little manuring, if it be not ſtiff Clay, too cold or wet, but rather a compound, moſtly inclining to red Sand, and ſomewhat Stony, though a fine mellow Mould produces it better; plough this well, and make the Mould ſmall with the going over of Harrows, and beating the Clumpers; lay the Lands high, as for Wheat, with convenient ridges; then with an Iron Inſtrument like a Hoe, with a twelve or fourteen Inch'd broad Bit, draw the Furrows long-ways, pretty deep, place your Roots, or Sets in them, (for, from the Seeds no advantage ariſes, unleſs they are tranſplanted) let them be placed about two Inches one from other, and ſet about three Inches deep; then draw another Furrow ſo near, that the Mould turned out of it may cover the former Roots, and ſo one after another, till the whole be effected to your deſire, but the laſt, into which you muſt draw what Mould comes next. The proper time of ſetting them, is the latter end of *June*, or beginning of *July*, leaving ranges, or ſpaces between the Furrows, that a ſmall Hoe may paſs to take away the Weeds. All Winter they will appear green, like Sives, but in the Sum-

Summer, ſoon after the Flower decays, it appears to dry or wither.

In *September*, the Flowers being blew and lovely to behold, come up without any green leaves, or ſpires, and in the middle of each Flower you will find two, three, or four blades of Saffron ſtanding upright, and at the ſame time the Flower ſpreads itſelf; and when you perceive them thus to put out, draw them forth between your Finger and Thumb, and put them into a thick, clean Linnen-bag, the better to preſerve the ſcent; do this every morning, or otherways it will return into the Flower, or Earth, and you cannot, with any conveniency, come at it till the next morning; and this you may do for a Month together, the Flowers continually increaſing, and therefore the number of your Saffron-pickers muſt be according to the quantity of your Crop, that it be gathered with expedition; no time but the morning being proper to do it in.

Saffron will grow to bear two ſucceſſive Crops, but no more; for then you muſt tranſplant the younger Roots, and lay the elder aſide, as uſeleſs. Theſe Roots are commonly ſold by the Buſhel, and two Buſhel of good ones will ſufficiently furniſh an Acre of Land ſo ordered as directed.

The Seaſon for taking it up, is the beginning of *July*, or you may do it the latter end of *June*, if you ſee occaſion. To dry Saffron, when gathered, you muſt make a Kiln of Clay, not quite half ſo large as a Bee-hive, though in form like it, with ſmall Sticks laid over; and it muſt be tended with a moderate Charcole-fire, turned, and ordered, ſo that that it may dry well in every part: and to know when it is ſufficiently dryed, reduce three pound, as it grows wet or moiſt, to one when dryed, and it is ſufficiently ordered; and of a good Acre you may expect fifteen pound of well dryed and good conditioned Saffron; though two pound, at the rate it goes, will much overballance your charge and labour.

CHAP.

CHAP. XL.

Claver, or Clover-graſs, how in the beſt manner to order the Seed, Sow and Increaſe it, for the improvement of Land.

THere are ſeveral ſorts of Claver, called vulgarly, Clover-graſs, from whence great advantage ſprings in the improvement of barren Land; it being my intent to encourage the induſtrious Husbandman in every thing that is convenient for improvement of this nature.

As for the Land proper for the increaſe of this, I hold that beſt, that is dry and warm; for though it be coarſe, yet with a little Manure, it will produce excellent Graſs of this kind: Land that has been ſowed ſo often with Corn, that it will well bear it no longer without new dreſſing, will, nevertheleſs, ſerve this turn, eſpecially earthy, well-mixed Land, of a middle temper, with a little improvement, is excellent for it: You, for this, may manure it with Dung, Marl, Lime, or Chalk beaten ſmall; and laſtly, your natural cold Land ſo ordered, will turn to good improvement, if it be well drained to prevent overflowings, or the Water lying long upon it; and indeed, moſt ſorts of Land well ordered, produce it, though ſome more in abundance than others.

And this I ſhall lay down for a general Rule, That the Land which is not too rank, or fat, for any ſort of Corn, is not too good for this ſort of Graſs; but barren Land, without improvement by manuring, will not produce it to anſwer expectation: as for the ploughing, uſe it as directed for Fetches and Pulſe, Chap. ...

As for the great Claver, which is the beſt, the Seed of it is like that of Muſtard-ſeed, but not ſo round, rather inclining ſomewhat to an oblong: The choiceſt of this is of a greeniſh yellow colour, ſome a little reddiſh, but the black is not ſo good; and therefore in the choice of your Seed

Seed have a great care, for that is the main of the buſineſs to anſwer your coſt and induſtry; and of this Seed we have as good among ourſelves as any is brought from *Holland*, for what by their Kiln drying of it, and the Sea, in bringing it over, it many times, taking Salt-water, deceives the expectation of the Buyer, and anſwers little of the charge; and to get it out of the Huſk, which is ſomewhat difficult by thraſhing or beating, it may be milled out with Stones, not too ſharp, and hanging at a proper diſtance, that they may bruiſe the Husks but not the Seeds; yet, ſince it is to be had ready taken out, I ſhall not trouble the honeſt Country-man about this particular, for, if he has none of his own he muſt buy it, and try a little of it, whereby you may ſee how it will ſpring up, that you may not be fruſtrated in your Labour and Expence; a Gallon, or twelve Pound, is ſufficient to Sow an Acre well, if it be lightly diſtributed, and if you Sow ſome of the Chaff of the Husk with it, it will thrive the better; and, that it may fill the Hand the better, to ſpread, mix with it ſome fine Earth, or fine Aſhes, that the Wind may not ſcatter away more to one place than to another, for it being ſo very ſmall, you cannot ſee how it lies on the Land, to know whether it is equally diſtributed; then again, it will not, as Corn, be drawn even by the Harrow; when it is not ſo, it muſt be ſowed then in calm Weather, that the Wind may not have power to drive it, but that it muy fall incidiately to the Ground: You may ſow Barley, or Oats with it, and the firſt Year it will not grow up ſo far as to hinder them; but then they muſt not be ſowed ſo thick as in other caſes, and when they are harrowed in, and this Seed ſown, after a gentle harrowing, or the drawing over of Whitethorn Buſhes, will ſufficiently cover it, and it will laſt on the Ground many Years: The beſt time to ſow it, is the end of *March*, or the beginning of *April*, if it be likely to be a dry Seaſon; late ſowing may do in a fruitful Seaſon, but early is moſt certain; and in this manner, on Ground where it takes, it will bear three Crops, two to Mow and one to Graze, the firſt by mid-*May*, the ſecond about the latter end of *Auguſt*, and then by the beginning of *October* it will be grown up for Grazing, which you may continue

till

till *January*; it is beſt cut moderately green, when the Sap is in the Stalk and Leaf, and then, being well dried, renders it the ſweeter and moſt nouriſhing, unleſs you keep it for Seed alone, and then it muſt grow up to its full growth, and be very dry, but then Stalks are good for little more than Fuel; however, the Seed, if well got out, will recompence the charge.

It is a very good feeder of Cattle, increaſing Milk in Kine, and fattens Oxen above any other Graſs, as being of a fat, ſweet, and luſcious nouriſhment; and ſow a good Acre the ſecond Year's growth for Mowing, and Feeding will return you the advantage of twelve Pounds, which is ſufficient profit, ſeeing it will grow upon Grounds of twenty Shillings an Acre, or under, very well, and laſt good forty five Years, with a little manure; and one advantage is in it, that when it dwindles it prepares the Land for Corn, ſo that one under another it comes to great profit.

CHAP. XLI.

St. *Foin, or French-Graſs; Directions for Sowing, Ordering and Improving it on Land.*

THere is another kind of this ſort of Graſs that turns to good advantage, and that is St. *Foin*, originally a *French* Graſs, ſo far as I can gather by the firſt Improvers of it, ſowed then upon dry husky Lands, and ſometimes in their Gardens; it yields to Cattle, that feed on it, abundance of Milk, and will grow and proſper in any barren hilly Land, though it thrives better upon Land that is moderately manured with Dung, Marl, or Chalk; and when it has grown ſeven Years, the Root ſo ſpreads, that being ploughed in, it becomes excellent Manure to prepare the Land for Corn.

The Seed of it is moſtly like a Parſnip-ſeed, only a little browner, rounder, and fuller; you muſt, by reaſon it is bigger,

bigger, ſow more in quantity than that of Claver, for the ſmaller the Seed is the further it ſpreads in the Ground, ſo that a Pound and a half of this, or ſomewhat more, will go no further than a Pound of the other, for the thicker and cloſer it grows, the better it ſtocks the Ground.

The manner of ſowing it may be with Barley, or Oats, and being mowed with them, may be uſed as good feed, but the ſeparating I hold the beſt; it may, the firſt ſowing, be mowed the latter end of the Year, and ſo preſerved for a good Crop five or ſix Years after, and then the Spirit decaying, the common Graſs will overcome it, and by that time it has prepared the Earth fit for Corn again.

There is alſo another Graſs, by the *French*, called the *La-lucein*, which is exceeding good Fodder, and this will well grow on dry and barren Lands, but this is not very common, nor has any conſiderable improvement been made of it in this Kingdom; however, it may be proper for barren Lands of little value for any thing elſe, and an Experiment would not be amiſs to improve it; for, by Induſtry, through the bleſſing of God, all the Improvements we have, have been brought to paſs to the enriching and plentifully feeding the Nation, whilſt Sloth would have brought Poverty and Want.

CHAP. XLII.

Improvement of Land, by Sowing and Well-ordering Turnips.

TUrnips are a great improvement of Land; for, beſide the advantage they yield in ſelling, for the Kitchen, and the feeding Cattle and Swine, the Roots and Leaves may be brought to rot on the Ground, and become good Manure; beſides, they hinder not the firſt Crop, eſpecially of Peaſe, Beans, or Barley, but being ſown when they are taken off, grow and flouriſh in the Win-

ter, and are properly drawn before Barley, or Oats Seed-time, though you may ſow two Crops, the early and the latter. The Seed being ſmall, may for the better, and more even ſpreading of it, be mixed with fine Mould; or to prevent the Bugs, or Worms eating it in the Ground, with Wood-aſhes; they require, if the Ground has been well broke up, but a light plowing, but to be well harrowed, that the Birds deſtroy not the Seed, which if you perceive to have been done, by the barrenneſs of one place more than another when they come up, you may ſow that again, and there will be little difference in their coming to perfection. They delight in, and proſper beſt in a mellow Ground, or a mixture of Sand and Clay; a black Mould is exceeding good to produce them, for if the Ground be hard their roots will not ſpread, or come to their full natural perfection.

Of theſe very uſeful Roots there are two ſorts, both of one kind, that is, the round, or bulbous, and the long Parſnip Turnip, but the firſt is the moſt numerous and uſualeſt ſown in Fields.

When you have ſowed and harrowed the Seed, laying the Land as even and level as may be, go over it with a Rowler of weighty Wood to preſs it in and break the remaining Clods, that the growing Seed may the eaſier put through it, and when they are pretty well come up and the leaves begin to ſpread, they muſt be diligently hoed over, and the underlings culled out, by cutting them off even with the Ground, or ſomewhat lower, that the principal Plants may receive the Sun and Air, more freer and thrive the better; and, when they are grown larger, if they appear too thick, they muſt have a ſecond hoing, and then the tops will ſpring up amain, and the roots have more Earth to ſpread in. If you find a black ſort of a Caterpiller to light on them when they come up firſt green, or grow a little height, which poyſon and eat up their leaves, by that means hindering their growth, if you cannot flow them for a time with Water to drown theſe Inſects, go over them with a great heavy wooden Rowler, taking care that the Horſe, with his Feet, ſpoil as few as may be, and the weight of this Rowler bearing the

tops

tops hard to the Ground, will cruſh the Inſects to death; and if this be done in a dry time, when they are in this manner moſtly infected, the tops, with the heat of the Sun and a little ſprinkling of Rain, will riſe again, and flouriſh more than ever.

To preſerve the beſt Seed for the next Year's ſowing, take a conſiderable number of the faireſt and largeſt Turnips, free from Worm-eaten, Stringyneſs, rough-Rinds, or Warts, and tranſplant them to a good Soil when they are growing to Seed, covering them pretty high with Earth, that is, about four Inches above the Root, ſetting them a Foot and a half diſtance, and water them a little, if the Weather be very dry, and ſo let them run to Seed; then cut of the Stalks when the Seeds looſens and begins to ruſsle in the Pods, and, having well dryed them in the Sun, put them into a large Hop-ſack, and by beating them with Staves that the Seed will come out, which you may Sift, or Winnow from the Husks, and lay it up in a moderate dry place for your next Year's uſe, ſowing it as before, and ordering in all particulars, where required, as directed, and you will have Winter-ſtores for yourſelf, plenty for your Cattle, and the like for the Market, if you live near any good Towns; this being a very wholſom, moiſt, cooling, and nouriſhing Root, good againſt Feavers and all hot Diſeaſes, allaying the acrimony of the Blood.

CHAP. XLIII.

Improvement of Land by Sowing of Carrots, and how to well order them, &c.

CArrots are very wholſom nouriſhing Roots, and by them Land may be well improved, but in every Soil they will not proſper, as moſtly delighting in warm Sandy-ground, mixed with a moderate fruitful light Mould, and if you ſow them in any other it muſt be well ſtirred and manured, but where you find a natural light

and warm Ground, if it be but indifferently fertil, they will, however, thrive therein; you may ſow them in intervals between Beans or Peaſe, laid in Furrows, and ſo reap two advantages with a little more labour and coſt, the one not hindering the other, for as much as the Carrots are ready to draw, the others will be taken off the Ground, and though in doing it, ſome of the tops may be bruiſed in trampling, they will recover and ſpring up again.

The Land theſe are ſowed in ſhould be rather digged than ploughed, or if the latter, it muſt be very deep, to give the Roots leave to grow to a full length and bigneſs.

When you have ſowed the Seed about the middle of *March*, or much ſooner, if the Weather be open, you muſt, if you ſow them between any rows of other Seed, rake them in with an Iron-rake, ſo that they may be very well covered, and they muſt lye dry, for too much wet and moiſture periſhes the Seed, or Roots; for, though the Seed be hot and requires ſome moiſture, yet a great deal deſtroys its natural heat, and kills it; you may ſow theſe thin to ſave the trouble of hoing, but if they come up very thick, contrary to your expectation, they muſt be hoed; they alſo require weeding till the tops ſurmount the Weeds, and then they will of themſelves deſtroy them.

The beſt ſort of theſe are the deepeſt yellow, or red, the faint yellow are fit only for the Summer Seaſon, not ſubject to grow to any bigneſs, as the others; if the Ground be ſterril you muſt manure it e're you ſow the Seed: In Sand you may well keep them all the Winter, for Sale, your Table, and to fatten Swine.

CHAP.

CHAP. XLIV.

Improvement of Land by Sowing of Parſnips, and the well-ordering them.

PArſnips are a good improvement, where they will kindly grow, and come up to a proportionable bigneſs; they are a Root of a luſcious, oyley taſte, wholſom, and extraordinary fattening.

The Seed of this is proper to be ſown in the Spring, and is much delighted in rich mellow Ground, which muſt be digged deep, that the Root may the eaſier ſhoot downward and grow thick to full proportion; many Fields, with a little manuring, will produce of theſe a great encreaſe, and turn [illegible] a wonderful advantage, where there is good Sale for them, over and above the Offal that will fatten Swine, and as much as will ſuffice the Family; when they are grown to any bigneſs you may turn Cattle into the Field, whoſe brouzing on, and treading down the tops, will make the Roots proſper the better.

This Seed muſt be ſown deep as can be, well raked in; they require little moiſture, and therefore may be ſown upon raiſed Lands, like Beds, and being taken up with a large Spade, that is, in length, they may as ſoon as cleanſed from the Earth be ſet to Sale, or elſe you may keep them a long time in good dry Sand, cutting off their tops to prevent their growing.

Another uſeful thing that may make good improvement, though not in ſuch a general manner, are Potatoes; theſe being once in the Ground will ſpread extreamly, and if a Root be cut in many pieces it will every part of it grow; they are very nouriſhing and wholſom to the Stomach, and a little piece of any ordinary Ground will produce a ſufficiency for the uſe of many Families a whole Winter, and many ſucceeding Winters, their encreaſe being

ing very great; but you muſt not ſow them in Stoney Ground, for that will much hinder their growth, and make them wrinkled and ill-favoured.

CHAP. XLV.

Improvement of Land by Sowing Weld, or Would, and how to order it.

THere are other Improvements, though not ſo common, that make good returns of Land and Labour, which (deſigning to Write a perfect Book of this nature) I think not convenient to omit; and firſt of Weld, or Would, a rich and profitable Commodity for Dying; it beareth a long, narrow, greeniſh, yellow Leaf, and produces a yellow Flower, running to a ſmall Seed, and is very thick ſet with them, ſmaller than a Muſtard-ſeed; it flouriſhes in *June* and *July*, growing in ſome places of it ſelf, and is produced on very indifferent Land, hardly fit for any thing elſe without much manuring, ſo it be very dry and warm by nature.

It coſts but little the managing, as requiring no Tillage, it being to be ſowed when and where you ſow your Barley and Oats, upon that Husbandry, without any addition, unleſs drawing a few Buſhes with weights over it, or preſſing it into the Earth with a Rowler; ſow it even, for the Seed being ſmall will require ſkill in this, therefore mix Aſhes or fine Earth with it, that it may ſpread the better when well mingled with either of them.

A Gallion of this Seed is ſufficient to ſow an Acre, adding, for the better ſpreading two Gallons of Earth, or Aſhes, to every Quart; ſtir the Compoſition often, to mix it, leſt the Seed ſink to the bottom and ſo deceive you; caſt it out at arm's end in as even a compaſs as poſſible, and in the Summer you will receive a good Crop; and when it comes to ripening, be curious in obſerving it, for if you let it grow too long the Seed will fall out; if not long enough,

nough, neither that nor the Stalk will be perfect; and therefore note, both the ripening of the Seed and the turning the Stalks; and when you perceive it properly ripened, pull it up by the roots, bind it in little bundles, placing them in little ſhocks, that the Sun and Air may freely penetrate to dry them; and in houſing, be careful not roughly to uſe it, leſt the Seed fall out; and by this, well ordered, there is conſiderable profit to be gained, as ten times the charge and price of the Land, if it comes to a good Market.

The Seed may be thraſhed out with ſmall Poles, or Wands, on a clean boarded-Floar, ſo cloſe joynted that they cannot run into the crevices, which may be reſerved for ſowing again; it colours a bright yellow and a lemon-Colour excellently well, and with the Stalk the Root muſt go, being of the ſame efficacy; and a great pity is it, that it is not more improved, ſince it may imploy ſtore of Land that lies in a manner altogether uſeleſs.

CHAP. XLVI.

Improvement of Land by Sowing of Woad, and how to order it, &c.

WOad is another uſeful and very profitable Commodity, laying the foundation and ſolidity of very many Colours, and a Woad-red Colour is free from ſtaining, excellent for holding its colour, and almoſt every ſad holding Colour muſt be Woad, therefore it conſequently is of great uſe and advantage in Dying. The Stalk is ſmall and tender, the Leaves of a blue green Colour, the Seeds is like to the Aſh-keys, or Seed, but not ſo long, like little blackiſh Tongues, the Root ſimple and white, it beareth a yellow Flower.

This, contrary to the other, requires very rich Land, that is warm and ſound, either a little Sandy or Graveliſh

will do, though the purer warmer ſolid Earth is the beſt; Land exceeding rich, though it ſhould be mixed with a little Clay, is alſo proper, if warm; in great deep rich Paſtures, many hills and hill-ſides are good Woad-land, when the bottom-ground will not ſerve it; but the principal Ground is the home-Cloſe, or leſſer Ground, lying near about, and bordering on Towns. The beſt natural parts of this Kingdom for Woad, are ſome parts of *Worceſter-ſhire* and *Warwick-ſhire*, *Oxford-ſhire*, *Northampton-ſhire*, *Glouceſter-ſhire*, *Leiceſter-ſhire*, and *Buckingham-ſhire*, with ſome other places.

The Ground for this muſt be choicely ploughed, and if very hilly, they muſt be caſt well, that they may lye even and fair on the ſuperficial part of the Earth, and then well harrowed; about four Buſhels will ſufficiently ſow an Acre, which done, you muſt cover it with a Harrow very fine, and break all the Clots, picking the Stones and Rubbiſh off the Ground, that it may come eaſily up; the proper time of ſowing is in the middle, or towards the end of *March*.

After the Land is ſowed and it begins to ſpring up, as ſoon as any Weeds appear they muſt be taken out, and be from time to time kept as free from them as may be, and when the Leaf is come to full growth, which will be ſome times ſooner, and at others later, as the ſeaſonableneſs of the Year produces, dryer or moiſter, you muſt cut it up and carry it to the Mills to be ground, and when it is ſo, make it up in little Balls and dry them well for uſe: And good Woad, in a ſeaſonable Year, may very probably yield five or ſix Crops, and ordinarily four and three, and the Winter Crop is excellent for Sheep, keeping them from the Rot and many other Diſeaſes; it likewiſe, contrary to the Opinion of ſome, prepares the Ground very well for Corn, and good Eſtates have been gotten by it: The beſt Woad has been ſold from twenty to thirty Pound a Tun.

CHAP.

CHAP. XLVII.

Improvement of Land by ſowing Madder, and how to order it.

MAdder is a very good improver of Land, and is much uſed in Dying, there is but one kind of it which is manured and ſet for uſe, but there are many things like it, as Gooſe-graſs, ſoft Cliver, Croſswort, Ladies, Bedſtraw, *&c.* which have all Leaves like Madder, and are ſuppoſed to be a wild kind of it; it has long Stalks and trailing Branches on the Ground, rough and full of joynts, and every joynt ſet with green rough Leaves, in the manner of a Star; the Flowers grow on the top of the Branch, of a faint yellow Colour, after which, comes the Seed round and green; the Root creeps far in the upper Cruſt of the Earth, one Root entangling into another, and when it is green and freſh the Root is of a reddiſh Colour, ſmall and tender; and although it bears a Seed, yet in this Country it comes not to perfection, and therefore it muſt be planted from the Sets that are to be gotten from the Madder; and the Seaſon of getting, or drawing them is *March* and *April*, as ſoon as they are ſprung out of the Ground about three Inches, every Sucker having ſome ſpines of Roots growing from it, being ſlipt from the main Root; as ſoon as you have drawn them, put them into a convenient Baſket with ſome fine Mold, and haſten them to the Ground where they are to be ſet, for the ſooner they are ſet the better they proſper.

The Ground they beſt thrive in, muſt be very rich, warm and a deep Soil, digged two Spades graſts and two wovelings alſo; and when it is raked and laied very even, then draw very ſtreight Lines, or Furrows, trod out in long Beds about four Foot broad, from one end of your Work unto the other, ſet them about one Foot aſunder every way, and if it be a dry Spring they muſt be kept wa-

watering till they recover their fading wan Complexion.

You may begin to dig your Ground in the beginning of Winter, and ſo all along, to the time of ſetting, weed it and hoe it till it have got the maſtery of the Weeds, and then it will deſtroy them: Set them by a Line for a good evenneſs with a Setting-ſtick, crumbling in light Mold to fill up the vacancy, and if any die you muſt fill up the vacancy, for they come not to their natural perfection under three Years, and the firſt and ſecond Year keep them hoing, and you may gather Sets from them almoſt as many as you have ſet, for the Root will bear it, by taking firmneſs in the Ground, and well ſpreading; ſo that theſe Sets will in the mean time ſupply other Grounds.

CHAP. XLVIII.

Wood-land and Incloſures Improved, and the great Advantage made thereby.

INcloſures and Wood-land are of great advantage to the Huſbandman, not only in ſupplying him with Timber for his own uſe in Building and Sale, but with Underwood for Hedging, Fuel and the like, for himſelf and Neighbours, to encreaſe Incloſures and paſs away the bitter cold of the Winter with keeping good Fires; beſides Trees may be planted, and will flourish in places where Corn, or Graſs, or any other profitable thing will not kindly grow; beſides when the Lands are cleared of Woods they prove much better, and yield greater plenty of Corn, with a little Manure, than many that have been long tilled lying round about them; they alſo yield pleaſant and delightful proſpects to the Eye, ſerve as cool ſhades to retreat in in the Summer, and in the Winter prove ſhelters to the Houſes, Barns and Lands lying near them, from the cold nipping Winds; and in Woods, by their warmneſs, Graſs in the vacant places ſprings all the Year,

Year, on which Sheep will feed well and grow fat, being by that means preſerved from the cold and rot; likewiſe well grown Woods, in moſt places, produce Maſt, Holm, Acrons, Hazle-nuts, Services, Medlers and the like; which, either falling of themſelves, or being diligently beaten down, feed a great number of Swine to a conſiderable fatneſs.

Lands of ſmall value may be, by planting of Trees, brought to grow up to conſiderable Eſtates; I find it confirmed by ſeveral, that Land not computed to be worth ten Shillings an Acre *per Annum*, has by this manner of improvement produced, at eleven or twelve Years growth, as much Wood as was fell'd from one Acre 60 *l.* And indeed, Moriſh Boggy-lands, that cannot be drained, or otherways improved to any profit or advantage, being planted with Oſiers, Willows, Alder, Poplar, or the like Trees, that affect and covet moiſt Ground, return in a little time to a great advantage for many uſes, growing very faſt, ſo that they turn to great advantage. It has been known that a hundred Aſhes, at the growth of fifty Years, have been ſold for 500 *l.* and theſe growing too on a very ſmall compaſs of Land, which they but little incumbred; and I find it ſet down, that a perſon planted ſo much Wood that, in his own life time, was valued at 50000 *l.*

Theſe great incomes and encreaſes, methinks, ſhould give many incouragement to imitate our Predeceſſors, that, as we find the advantage of their labours and induſtry, ſo Ourſelves and our Poſterity may find the like of our own; and for the better, quicker, and leaſt chargeable improvement of theſe things, I ſhall lay down plain and eaſie Rules.

CHAP.

CHAP. XLIX.

Of Oak, Elm, and Beech, how to Order and Improve them for the beſt advantage.

AS for the *Engliſh* Oak, among others, for firmneſs and durableneſs, it is counted the beſt Timber in the World for building Houſes, Shipping, and other neceſſary uſes, and yet it will grow in any indifferent Land, good or bad, as Clay, Gravel, Sand, mixed, or unmixed Soils, dry, cold, warm or moiſt, but they moſt affect, and beſt proſper in the ſound, black, deep Mold, a little riſing, rather warm than over moiſt and cold, for this produces the firmeſt and beſt Timber, though they will thrive very well in cold, moiſt Clay-grounds; they will alſo grow, though but ſlowly, on high, ſtony, and barren Hills, ſome ſow Acrons in their Nurſeries, when they are ripe, but not dried, and theſe produce ſtore of young Plants in the Spring, if ſowed in Autumn, which may be removed the next Year, and planted in forms for Groves, Woods, or Lawns; but I hold the Slips and Plants got from the roots of Oaks thriving, and of a moderate age, are better, and will much ſooner come to perfection, if planted and fenced from the brouzing of Cattle, the nipping northern Wind, whoſe unreaſonable cold in Winter does much hurt to young Plants; and if any of your Plants be crooked, or ill-ſhapen, cut thoſe near to the Ground, when you ſet them, and other Shoots will ſpring up from them, that will grow ſtraight, and become very aſpiring in time: Oaks likewiſe proſper very well in Copices, eſpecially to be felled as Under-wood; beſide the Wood of theſe Trees for various uſes, the Bark is of good value, and for Tanners and Dyers uſe, not to be omitted; nay, the Saw-duſt and Aſhes are of value; ſo that there is no loſs in any part of it, that is not proper for ſome uſe or other;

other; in Charcoal it is the beſt of all Wood, and endures wet and dry to a long continuance.

The next of uſe to this in *England* is the Elm, chiefly planted in Hedge-rows, caſting a good ſhade againſt the ſcorching of the Sun, and proving a notable ſhelter againſt cold Winds, growing much faſter than the Oak; it grows well in moſt Grounds that are not hot, dry, and parching, Chalk, Gravel, and ſhallow Lands, for in them its large ſpreading Roots cannot well enter, and it requiring much Sap will not otherwiſe thrive, or come to any ſtatelineſs of perfection: It delights moſtly in light, level, and looſe Land that is moiſt, and on the Banks of ſuch levels as are fertil Ground. The Seeds of the Elm, as they are termed, which put out before the Leaves, in open weather, fall about the beginning of *March*, which, ſome hold, being ſown in a Nurſery, will yield ſtore of young Plants; but I like thoſe better that ſpring out of the Ground from the ſpreading Roots, that lye ſhallow ſome diſtance from the Tree, a great many of which may be eaſily taken up with Spurns, and ſome part of the main Root upon them, and theſe are called Suckers, being, at the proper ſeaſons, to be had in abundance, and theſe you may tranſplant into any place where it is proper for Elms to grow.

Take not thoſe Suckers that have been bitten, or bruiſed by Cattle, for they will not grow kindly, and theſe are eaſily tranſplanted with ſucceſs, ſeldom failing: If they be young, you need not cut off the tops, becauſe, being very ſappy, the wet will enter and decay the Plant; but, if of conſiderable growth, you may cut them as you pleaſe, making a ſtiff mixture of Clay and Horſe-dung to lay firm on the cut places to defend them from the decending Rain, which would otherwiſe ſoak into the Wood and injure the Plant. Some have a way, and with good ſucceſs, to remove large Elmes the quicklier, to make a ſhade about their Houſes, or ſhelter their Grounds, by opening the Earth about the Root of one of fifteen, ſixteen, or twenty Years growth, cutting off the ſpreading roots about a Foot and a half, and leaving only the ſtump-root to draw Sap up, then cover it again, and if it appear with no viſible decay, the next Year they remove it, when the Sap is well

ri-

riſing, and clap it into a Ground made better and more apt to receive it than where it firſt grew, ſetting the Root deep, and covering it with good Earth; ſo that pleaſant Groves of this have ſuddenly been erected where Trees have been ſcanty, to the great admiration of thoſe that have known the places bare a little before, and ſeen Trees of a ſtately growth flouriſhing, ſo that at firſt they could ſcarcely believe their Eyes and Senſes, it was the ſame place. This way is likewiſe eaſie to be taken by Willows and other light Wood, which will grow from great Poles without Coots, if ſet in agreeable moiſt places.

The Elm is a Wood much laſting, wet or dry, and ſerves for a great many uſes, growing to a prodigious height, affording great ſtore of Fuel and Timber, and is beſt felled between *November* and *February*, as being then all ſpine and heart, the Sap being gone down to the Root, and being very tough and laſting, it ſerves for the uſe of Wheel-wrights, Plough-wrights, making of Carts, Building, Planks, Coffins, and many other uſes; the young Sprays are good for Cattle, Conies, or Deer to brouze on, and the bigger Boughs make good Charcoal, and as it is common, ſo it is of very great uſe.

The next to this is Beech, formerly greatly in uſe for Building, delighting in warm Land, and growing to great ſtature, caſting a lovely ſhade, ſo that in former days it was uſually planted about Princes Palaces, though it delights moſt in the ſides and tops of high Hills, *&c.* and the roots will wonderfully penetrate ſtony places.

Where large Oak-Woods have been felled, Beech-Trees have been known to ſpring up in abundance, none growing there before. This is raiſed from the Maſt, as the Oak, and from young Plants, planted as the Oak; when young it grows but ſlow, but when it has got a head it mounts and ſpreads apace, none ſooner attaining to a large bulk than this Tree; and, though whilſt young, it may happen to be crooked, knotty, and ill-ſhapen, yet growing to a good body it will overcome theſe defects, and be ſtraight and a very compleat Tree.

This

This Wood is of great use for Joyners, Turners, Upholsterers, and formerly much used in building and flooring, being clean, white, not apt to rend, or split; it is good Fuel, burning clear and light, making excellent good Charcoal, though not lasting; the Mast of it feeds Deer, Swine, and many sorts of Fowl, Pheasants particularly delight in it and grow fat upon it; the Wood, with fine Saws, being cut into Scabboard, or Scale-boards, very thin, serve for many uses. It makes good Blocks for rigging of Ships, and many other Materials belonging to Navigation.

This Tree planted in Walks and Avenues, casts a very pleasant and delightful shade all Summer, few or none exceeding it for colour or coolness.

The leaves of this Tree gathered in Autumn, before the frost has nipped them, are excellent to lay under Beds, as Matresses, keeping them cool, and free from Insects; they cast a pleasant smell, and will keep so seven Years.

CHAP. L.

Of Ash, Walnut and Chesnut-trees, &c. Their Improvement and well-ordering.

THe Ash is another very profitable Tree for Timber and Fuel, being of a quick and thriving growth; it delights in good Land, though almost in any other it will thrive, as barren Mountains, Land hardly fit for any other use, but the much spreading of the roots where they stand, near Arable Land, hinders the Plough, and the Water dropping from them much injures the Corn; but Woods, Coppices, Wastes, *&c.* may be replenished with them, they usually growing better where other Timber has been fell'd, or decay'd by a long growth.

In Whit- and Chalky Land they prosper very well, as it appears by those of a very large stature growing on such Lands in *Wiltshire*, *Hampshire*, and other Counties in *England*; the Lops and Timber turning to a very great advantage.

These

Theſe Trees may be propagated of the Keys ſown, gathered in *October*, or after, when they are about falling off from the moſt thriving Trees: Theſe may be ſowed in a Nurſery, and the Spring come twelve-month they will be fit to tranſplant to ſuch places as you deſign for a continued growth; but this, as of all other Trees, is a ſlow way, and therefore I adviſe rather to get young Sets of a moderate ſize, and cut not off the young tops, becauſe they are very ſappy, if it be of the Seed, but if of the young Plants, you may cut them near the Ground, and if they take good root, as they will ſoon do, you need not fear but they will ſend up young Shoots and grow apace; and if any of them be grown up, and decay, if you cut them near the Ground they will revive and ſprout up with more ſpeed, and flouriſh exceedingly.

If you intend to have a Grove of Aſh on a Hill, or in open Ground, ſet the Seeds in rows with a Setting-ſtick, after the Ground has been lightly broke up, let them be at ſome diſtance, and many Seeds in a hole, that ſome may infallibly hit; and without tranſplanting, they will in a few Years ſpring to a good heighth; but if many Plants come up in one place, remove the underlings, that the main Plant may grow the freer, by being diſencumbred; but beware that Cattle deſtroy them not when young. You may plant them among other Trees that are grown pretty well, to defend them from their brouzings, and from the biting cold.

The uſe of this Wood is almoſt general, is proper in Building, where ſeaſoned, or well dried; it ſtands the Plow-wright and Wheel-wright in great ſtead; Coopers and Turners are much profited by them for Poles; it is excellent either for the ſupporting Hops, or any aſpiring things that cannot, without help, ſupport themſelves, and ſerves the Huſbandman and Gardiner for many Tools and and Utenſils; it is uſed in many things about Shipping, and in Maritime Utenſils; as for Fuel, it burns ſweet, wet, or dry, leaving curious white Aſhes behind them, and little earthy parts: The Leaves ſtamped, and laid to the bite of any venomous Beaſt, draws out the Poyſon; and with ſucceſs the Juice of the Leaves are drank againſt any Poyſon inwardly received.

The

The Season for setting the Ash, for the best growth, is from the end of *October*, or beginning of *November*, till *January*; for if the Sap at setting be but a little in the Tree, the Worm takes it and hinders the growth very much, spoiling in the end the Timber. I have been credibly informed, that an Ash at forty Years growth from the Key, or Seed, has been sold standing, for thirty Pounds, and the Person who bought it got ten Pounds by it, when cut out into Timber and Fuel.

As for the Walnut, Chesnut, and Service-Trees, they are proper to the Woods, yet bear Fruit very advantagicus to the owner.

As for the Walnut, it grows best on Hills, where the Ground is tollerably good, in a curious Sandy, or Gravelly Soil; and, beside the Fruit that is delicious and nourishing, making good Oyl for sundry uses, the Wood is of great esteem for Gun-stocks, Cabinets, In-laying, and many other things. This Tree grows of Sets, or Nuts, to a prodigious bigness, though it rises not so fast as the Ash; and if you design their propogation by Nuts, after you have laid them to sweat, enter them in Sand, and at a Month's end put them into Water, and those that swim lay aside as useless, but such as sink, dry them and lay them in Sand a Month more, and then, in the beginning of the Spring, set them, and they thrive best unmoved, therefore set them at a distance one from another, and when they grow up fit for transplanting, if occasion require it, mark the quarters of the Winds, as they stand, on the Bark, and place them, when removed, directly the same way; slips may be taken from the Roots of the growing Walnut-Trees as they are well-springing up, with some little of the Root and Bark with them, and set in Sandy, or a mixed Soil, *&c.*

The Chesnut-Tree was formerly very flourishing in *England*, as appears by many eminent ancient Buildings, whose Timber mostly consists of that Wood, being very firm and durable. These may be raised from Nuts as the former, *viz.* spread them when they are so ripe that they drop from the Tree, and let them sweat a while, then use them, in all respects, as the Walnut, set them at a distance

in

in a mixed Soil, for they thrive beſt unmoved. You may ſet them in Winter or Autumn, in or without their huſks, or you may ſow them with other Maſt for the raiſing of Copices.

It is a very thriving Tree, producing extraordinary good Poles for divers neceſſary uſes, and in ten or twelve Years time grow to a kind of Timber, and bear plenty of Nuts. This Timber, for durance and ſervice, is next to Oak; being planted in Hedge-rows, or Avenues, it yields a pleaſant ſhade and ornament.

The Service-Trees are raiſed from the Berries, as other Maſt may be, which, being ripe, may be ſown as other Maſt, and they will grow apace; or you may draw young Plants in Woods where they are overſhaded by other, more ſpreading Trees, and cannot well come to their growth; they cauſe a beautiful ſhade, and the Berries cauſe good digeſtion; the Wood is uſeful for Joyners, as being of a very delicate Grain, fit for many uſes; it alſo yields Beams of a conſiderable bigneſs.

The Birch is another Tree very uſeful and profitable, and will grow almoſt on any Land, ſo that barren Land may be much improved by it: It will thrive on hot burning Sand, in cold moiſt Clay, and in marſhy Ground, Boggy, or Stony places; this is properly produced by Suckers, which may be planted at five or ſix Foot diſtance, and they will grow a great pace, riſing, as it were, ſuddainly to Trees; after the firſt Year they may be cut within an Inch of the Ground, and they will ſhoot out very ſtrongly. This Tree yields excellent Sap in great quantity, and being prepared with Honey, or Sugar, into a Wine, is very medicable, as well as a pleaſant innocent Liquor, called Birch-wine.

It may be extracted by cutting ſome ſmall Branches when the Sap riſes, in the end of *February* and beginning of *March*, the Weather being open, and eſpecially when the Wind is at South, or Weſt, hanging Bottles at the cut Branches to receive the criſtaline Liquor; or you may bore the Tree and tap it; and by this means you may get great quantities, it flowing forth very freely. The ſmall Branches of this Tree turn to great advantage in making Brooms,

Brooms, Whiſks, Wickers, and many other uſes they are put to; the Timber is likewiſe very good, and the greater Brances make good Poles.

CHAP. LI.

Of the Maple, Horn-beam, Quick-beam, Hazle, Box, Juniper, Holly, and Fir-Trees, how to Order and Improve them.

THere are yet other Trees uſeful, either for Fuel or ſhade, that turn to the advantage of the induſtrious Huſband-man.

The Maple. This requires a dry and ſound Mold, growing in Hedge-rows very well, as alſo in Woods and Groves; it may be propagated by Sets, or the Keys of the Aſh. The Timber is much eſteemed for its whiteneſs, and the Diaper-knots found in it ſerving for Trenchers, Bowls, and many other Utenſils, and much eſteemed in Joyner's Work.

Horn-beam much affects the open parts of Woods, and ſet in Walks or Avenues, produces a pleaſant ſhade. It will grow indifferently on any Soil, it muſt be ſet deep, and the Sets may be about two Inches in compaſs in the middle; it may likewiſe be raiſed of thoſe Seeds that are ripe in *Auguſt*, if ſown in *October*: But ſince moſt Woods yield ſufficient Plants, I like the ſetting them beſt, for the greater expedition. The Timber is very hard, and therefore uſeful for Wheel-wrights, or making Tools for Rural uſes.

Quick-beam proſpers beſt in good light Ground, though it delights in Mountains and Woods; Plant the young Sets as the former, or it will grow from the Berries that are found ripe about the middle of *October*; it grows apace in Woods and Coppices, yielding excellent Fuel, and is good for divers other uſes.

The

The Hazle, though of great value for the Nuts, yet is a Wood-tree, affecting, above others, dry, barren, and cold ſandy Ground; likewiſe Rocky and Mountainous Soils produce them, though they thrive much better in Hedge-rows, where the Sun has power to invigorate them.

This Tree is properly raiſed from the Nut, preſerved moiſt, but not moldy; and to do it, you may lay them in their own dry Leaves, or in Sand: Theſe ought to be ſet about the latter end of *February*; but, as in the caſe of all other Trees, young Sets, or Suckers, will ſooneſt grow; but cut not theſe the firſt Year, but the Spring following, within three or four Inches of the Ground, that is, if your Sets be ſmall; but greater Sets may, the firſt Year, be cut within ſix Inches of the Ground.

The Hazle, though it ſeldom grows to ſubſtantial Timber, is yet very profitable for the bearing of Nuts, for the feeding of Swine, and pleaſant for the Food of Man, out of which, is likewiſe extracted a curious Oyl. They produce curious Poles and Rods, make Fiſhing-tackle, and divers other Inſtruments; alſo the Under-ſtems, and Sprays, good Charcoal, and Fuel, and is a good ſhade and ornament to Walks. When the Nut-trees flower much, it is a ſign of a plentiful Corn-harveſt.

The Box-tree is of a great uſe, though of ſlow growth; it will grow on any indifferent Land, and is encreaſed by ſlips; it keeps green all the Year, and gives a very pleaſant proſpect; the Wood is of ſingular uſe, and bears a great price, being uſually ſold by weight: So that a Grove of well-grown Box of ſix Acres has been ſold for 3000 *l.* the leaſt part of this ſort of Timber being fit for one uſe or other, and too precious to be committed to the Flames.

The Juniper-tree covets to grow on hilly and gravelly Ground, the Wood, Leaf, and Berries, are medicinable; it may be ſowed of the Berry, or ſet of ſmall Slips; it laſts green all the Winter, and in burning caſts a curious ſcent: It is proper to make fine Boxes, Cabinets, and other curious Works; the Scent of it keeps away Worms and Moths; its Gums, or the ſweating of it, is good againſt pains in the Stomach, or Heart, and prevents infectious Air.

Holly

Holly is a tough Wood, keeps green all the Year, and carries on it in Winter, a curious red Berry, it thrives in any indifferent Ground, and may be ſet by Slips, or Berries; the Wood, if large, yields a good price.

The Lime-tree muſt be planted in an indifferent rich Soil, for it will not thrive in hungry, cold, dry Land; it is raiſed as Suckers from the Elm, or from Seeds, or Berries that drop in Autumn from the Trees, and theſe are moſtly uſed for ornament in Walks, caſting a lovely ſhade, though in Woods they grow a good pace, and yield Timber, Poles, and ſtore of good Fuel.

The Yew-tree may be propagated in any barren Ground, even on the blackeſt Hills or Mountains, it being hot by nature, producing a curious red Berry, luſhious, and ſweet as Honey, though the Stone, or Seed, of it be very bitter; and theſe Berries put into the Ground, will grow, and being ſet regular, about eight or ten Foot diſtance, produce, in a little time, a very curious Grove, green all the Year; the Wood of it is very ſappy and tough, bearing a good price, for of it are made our beſt *Engliſh* Bows, exceeding thoſe of all other Nations; theſe Trees, as others, may be planted of Suckers.

The Fir and Pine, being naturally hot, delight in cold Grounds, high and rocky Hills and Mountains; they will be raiſed by the Kernel taken out of the Clogs, or Pine-apples, ſoaked in Water, and then expoſed to a gentle warmth; theſe you may ſow in a Nurſery, or where you intend they ſhall grow up to a Grove, or Wood, eſpecially the Pine, which will hardly bear a remove, unleſs very young, though the Fir may be very eaſily removed, and propagated on Slips, and will grow ſmall and ſtreight, to a prodigious heighth, if it take good root, even to ſixty Foot high in twenty Years growth, though in the ſix Years they ſeem not to grow very faſt, but afterward ſhoot up exceedingly.

CHAP.

CHAP. LII.

Of Trees delighting in wet Ground, as the Poplar, Aſpen-tree, Alder, Willow, &c. their Ordering, and the beſt way to Improve them.

THus, Reader, having declared what is neceſſary for the improvement of dry barren Lands, by planting the moſt uſeful Trees for Timber and other ſervices, I think it fit, in the ſame manner, to inſtruct you to improve wet, boggy, and otherways uſeleſs Lands, by planting of Trees to yield great ſtore of advantage by Fuel, *&c.*

The Poplar, a Tree well known, grows exceeding well in moiſt Grounds, near the brinks of Rivers, but not in the Water, as the Willow; this Tree is propagated by ſtreight Branches, or Pitchers, ſet in the Ground; but beware you cut not off the tops till they are of two or three Years growth, and head them at eight or ten Foot high, and in a few Years their Branches will ſpread exceedingly. The Timber is white, and of ſingular uſe for Turners work, and to make Tools for the Huſband-man; and beſides its pleaſant ſhade it yields abundance of Fuel.

The Aſpen-tree delights in moiſt, wet Ground, though it will grow in Woods and Copices; it differs not much from the Poplar, and is propagated by young Suckers, whoſe tops you muſt not cut off the firſt Year.

The Alder may, with ſucceſs, be ſet in wet Lands, and much improves it; of theſe you may ſet Trunchions, and they will grow very faſt, they will alſo grow of Seeds, but the beſt are young Sets with roots, being ſet as big as the ſmall of a Man's Leg, and in length about two Foot; cut not the ſmaller Sets till they have ſtood three Years, and ſo they will produce great ſtore of Wood for Poles and other uſes.

The

The Withe is a good improver of boggy Land, as alſo the Oſier, which turns to a very great advantage, being worth 9 or 10 *l.* an Acre, where the Land before was of little or no value; if they can be carried eaſily by Land or Water, to the places where they make Baſkets, Chairs, Scuttles, and the like Ware; they may be cut every two or three Years.

The common Willow affords much Fuel, Poles, and Binding-rods; this will grow either by Roots, Slips, Trunchions, or the like; plant them in *February*, if the Weather be open, and ſo till they Bud.

Theſe watry Trees are of a clean white Wood, and very great improvers, increaſing exceeding faſt, and the better, when they are once grown up, for being lopped, and are a good ſhade for Cattle in Summer, and afford them good brouzing.

CHAP. LIII.

Farther Improvements for Ordering ſundry ſorts of Trees for the valuable Improvement of Land, &c,

THere remain yet other things not treated of in relation to the improvement of Land by Trees, *viz.*

As for ſuch Trees as caſt their Leaves in the Fall, the beſt time to tranſplant them, to other convenient places, for Timber, Under-wood, Shade, or Ornament, you may do it, the Weather being open, in *October*, *November*, and, upon neceſſity, till they begin to bud, in the Spring; and thoſe Trees that do not ſhed their Leaves, but are green throughout the Year, are beſt removed in the Spring, when the cold is abated and the Sun opens the pores of the Earth, that the Roots may ſpread, and the Sap be continued by freſh moiſture; and it may be well done in *Auguſt*.

The pithy Trees, as the Aſh, Lime-trees, Sycamore, Aſpen, *&c.* need no cutting, upon tranſplanting, till they have well taken root one Year; and then, to haſten their growth in bigneſs, you may cut the tops of the uppermoſt branches that too luxuriouſly expend the moiſture that ſhould feed the bole and under-branches. As for Fir, or any Roſiny-tree, cut not the roots, nor the branches, but a very little, becauſe they will be apt to ſpread their Roſin, or Turpentine, too much, to the decay of the Plant, for that is it which keeps it alive and and makes it proſper.

This method may be uſed to tranſplant Suckers, Scions, Slips, or Layers, of Birch, Elm, Cheſnut, Oak, Beech, *&c.* But where they have not good root, it muſt be done in the Spring, when the Sap is riſen, and they begin to put out their buds. All Trees delighting in wet, or watry Ground, may well be tranſplanted in *February*, or *March*, before they are too forward, if the Froſt be well out of the Ground.

Remove Trees rather into a better than a worſer Ground wherein they naturally grew, or, at leaſt, ſo much good Earth in the holes you make to ſet them in, as may firſt give them a fixed rooting, and ſo they may get a head, and when they are once acquainted with the nature of the Land they will thrive amain; let as much of the Earth in which they firſt grew, as may be, adhere to the root when you remove them, that ſo they may be the better nouriſhed, and grow more kindly, and let the ſpurns of the roots be, as many as may be, pretty long and large, except the top and downright roots, that ſo they may ſpread every way; and, that they may the better do it, make the holes you ſet them in large, and fill in the Mold looſe upon them.

If you would have your Trees proſper well, remove them not out of a warm ſhelter into a bleak, cold Air; and, to keep them ſteady and upright, that they may not decline, nor much looſen by the blowing of Winds, keep the Earth pretty high about them above the level of the Ground.

The

The Oak, Pine, Walnut, and other Trees, that bear ſpreading branches, at the tranſplanting, ſet at a good diſtance from each other, at leaſt forty Foot; but the Beech, Aſh, Yew, Fir, and Cheſnut, may ſtand much nearer, *viz.* at a third of the diſtance. The Hornbeam and Elm, will grow the neareſt of any Trees together, and theſe you may plant in a regular, or a promiſcuous order.

As for the watring of Trees in dry Seaſons, care muſt be had of it whilſt they are young, eſpecially as ſoon as they are tranſplanted, for this ſettles the Earth about them, and makes the Roots take firmer hold, and if they have been far fetched, ſet the Roots in Water ſome time before you plant them, and if you find the Wind much ſhakes them, ſet ſtrong Stakes by them, and faſten the Trees to thoſe Stakes with wiſps of Hay, that they may the better be ſtrengthned, and ſo order it, by putting Moſs, or Hay, between the Plants, that the rubbing may not fret, or gaul them; you may lay about the Roots of them, Fern, Stubble, Hawme, or any other ſuch like things, that, in the firſt place, it may keep them warm, and, in rooting, dung them: Stones laid about the Roots of Trees, keep them moiſt in Summer, and warm in Winter: Coppices may be planted about Autumn with young Sets, or Plants, the beſt way in rows, at ten or fifteen Foot diſtance, for then you may very well reap the benefit of Intervals, by ploughing, digging, and ſowing, and have a great deal the better conveniency for the grazing of Cattle, and proper ways for Wains, or Carts, to fetch away the Timber, or paſs from one Ground to another; beſides, it will yield you pleaſant ſhady Walks; and then, if you would thicken your Coppice, when well grown, bend ſome of the Boughs that are neareſt to the Ground, give them little nicks on the back of the bending, and put them a little way ſo bowed into the Earth, covering them with Mold, and keeping them from riſing with hooked Stakes driven into the Ground, and, ſpringing up, they will produce a great many Suckers, and, in time grow up into Trees, or, at leaſt, conſiderable Under-woods.

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CHAP. LIV.

How to Order Trees for their better growing and more ſpeedily turning to good Advantage.

TO preſerve Trees in good plight, and to make them grow apace, there are other things required, than what I have hitherto mentioned.

Firſt, Prune them, when they are ſomewhat well grown, raking off with your Pruning-hook, the ſmalleſt, and moſt ſuperfluous Boughs and Branches, doing it upward, about *January*, that what of the Snag remains to the Tree may not ſplit; and the beſt way is to cut them off as cloſe to the Body of the Tree as may be, leſt the Stump rot, and Water get into the hollow part to ſpoil and doat the Timber.

Secondly, When you perceive your Plants will not grow up to tall Timber, ſhroud them, or lop them, and they will grow up to be very good Pollards: This muſt be done above the heighth of the reach of Cattle, ſmooth, and aſloap, taking off the top and main Branches; this may be done in the beginning of the Spring, or the end of the Fall, and ſo, when they are grown up, you may lop them every four or five Year for good Fuel; beſides, theſe may ſtand in Hedge-rows, or vacant places, fit for no other uſe, and, after they have afforded you great ſtore of it, the Bodies, if they hold ſound, make a good ſort of ſhort Timber, very fit for Planks, and other uſes. As for Winter-greens, as Pines, or any other roſinous Tree, they muſt be cut in Winter, after the great Froſts, and coldeſt Winds are over; but in no wiſe be beheaded, nor the collateral Branch much cut off.

Thirdly, All Trees delighting in wet, or moiſt Ground, may be ſhrouded, or lopped, in the beginning of *March*, the Weather being open, but not too near the Body, leſt it endanger the Tree, and hinder its ſprouting.

Fourthly,

Fourthly, Coppices may be felled, or cut, from *September*, to mid-*March*, leaving such standards, as you intend for Timber, at an equal distance, chusing out the straightest, and most likely thriving, for that purpose; cut not above half a Foot from the Ground, and that sloap-wise, that the young Sprigs may the better shoot out, and grow, and furnish you with a second Felling.

Fifthly, When your Timber-trees are arrived at their best state, or you have occasion to sell them for advantage, fell the Oak from *April* till Mid-summer, for then the Sap is proud, and the Bark, which is a very good Commodity, will easily be got off: But for other Timber, the best Season is in Winter, when the Sap is low; for if it be much in those Trees, it breeds Worms, and much defaces the beauty of it: and the propereſt Months, are *December*, and *January*; when you sell large Timber, cut off all the large Arms first, lest they endanger the Tree, rifling, or breaking in the fall.

CHAP. LV.

Sundry Trees not yet mentioned, their Growth and Well-ordering, for the Improvement of Land.

Cypress Trees will grow tolerable well in *England*, and is not only pleasant for the cool refreshing shade it casts, but in indifferent mixed Sandy, and Clay-ground, it will grow to a considerable stature and thickness; but then they must not be set in over moist, or wet, places; and though they are most used to shade Walks, Avenues, cover Arbours, and adorn the centers of green Plats; yet, where they come to any thing of Timber, the Wood is exceeding good, hard, and durable, of a good Scent, preserving Cloaths from Moths and Worms, and lasts a long time without corrupting, or rotting: *Pliny* affirms he saw Gates of this Wood four hundred Years old, and yet, neither Worm-eaten, nor perished.

The Pine-tree is somewhat of the nature of the Fir, of a rosiny Sap, and a very hot Tree, therefore it thrives best in cold places, where the heat of the Sun cannot make it sweat too much, to spend and destroy itself, though it delights much in Hills and Mountains, where the Air is more free and cooler always than in the Valleys, yet will it thrive well enough in Woods, especially if they be upon a little rising ascent, that the wet passes away, and a mixture of Earth, of Gravel, Sand, and Clay; and, as the former, may be improved by Slips, or Scions, so this may also, and by the Kernel sown which comes out of the wooden husks of the Apples it bears: And were this Tree better regarded and improved in *England*, it might turn to as great an advantage here as in other Nations; and even our Hills might be covered with these, and Fir-trees; so, that in a few Generations, we need not be at the expence of buying and fetching home Timber of this kind, but have plenty of our own, to the great improvement of Land, that now is of little or no value.

There are some other Trees natural to other Countries, that might be propagated in *England*, and turn to the advantage of the industrious Husband-man; as the Larach-tree, a lasting sound Wood; as, also, the wild Olive, Almond, Date, Cedar, which, by good management, are conceived to grow well in this Country, and may be brought to a great improvement, though not to that perfection their native Soil gives them, yet so far as may be an advantage, very highly, to those that are at the trouble of planting and rearing them; for, when they are once well entred, they will produce numbers, and grow themselves without any further trouble, unless sometimes pruning and watring in a dry and parching Season, till their spreading tops are sufficient to shade their Roots, and prevent the Sun-beams from sucking up too much moisture from them, and may, as other Trees, be transplanted as occasion requires.

CHAP.

CHAP. LVI.

Of Trees fitting for Timber and other Uſes; the ſundry ſorts; their goodneſs, and to what uſes properly to be attributed; very neceſſary to be known, &c.

I Shall now, from what has already been laid down, proceed to the uſefulneſs of the Timber and Wood produced by Trees, that have not as yet been amply touch'd on.

Cedar and Cypreſs are excellent in Building, for their laſtingneſs; as not, in a great number of Years, being ſubject to corrupt.

The Fir, Poplar, Aſh, and Elm, are exceeding good for the inward parts of Building; as for main Timber, Jouſts, Rafters, Floors, *&c.* but hold not ſo well where they are ſometimes wet, and at other times dry, as the Oak does.

For the conveyance of Water, the Alder, Pine, Pitch-tree, and Elm, make curious and laſting Pipes; but then they muſt be covered with Earth, for above Ground they will not well hold, eſpecially in hot Weather, by reaſon of their rining; eſpecially all but the laſt, which will do tollerably well.

The Oak, Beech, and Walnut-tree, endure very well in the Water. The wild-Olive, Maſt-holm, and wild-Oak, are of long endurance.

For Rafters and Mortice-pieces, the Elm and Aſh are very properly adapted, becauſe of their length: The beſt to bear wieght is the Fir, and the Laraſh; which, howſoever you lay them, will neither bend, nor fail your expectation till Worms conſume them. On the contrary,

The Olive and the Oak will give and bend, and ſo will the Poplar: The Wilow, Birch, Elm, and Date, uſually

bend againſt the burthen they bear; the Poplar, on the other ſide, giveth upon every light weight; the Elm, and the Aſh, though ſlow, are eaſily bent.

Theſe are eaſily wound and bent, *viz.* The Willow and Birch, and the ſmaler Oak; Shingles to cover Houſes are beſt made of Oak, Beech, and the Wood of ſuch other Trees as bear Maſt; alſo of ſuch as yield Roſin, as the Pine, and the Pitch-tree.

For Tables, Stands, Bowls, and ſuch other houſhold Utenſils, the Maple, Aſh, and Walnut, are very curious, graceful *Engliſh* Woods, and much laſting.

Box is a Wood well known, of great value for its firmneſs and durableneſs, and uſually ſold, for its preciouſneſs, by weight; and ſerves for Combs, Hafts of Knives, Mathematical Inſtruments, and ſo many Mechanical uſes, that little, except the very tender Sprays, can be counted waſte in it; ſo that an Acre of good growth of this is held to exceed, by much, the value of twenty Acres of the beſt Corn; and therefore, conſidering when once it is well got in the Ground, that every twenty Years it may be well cut, and the Roots left will produce new Shoots to ſupply the place of what was taken away, what great advantage may be made by it, in improving Land where little elſe will grow, and that it requires no yearly toiling, ploughing, and ſowing, nor the charge of Seed.

Holly is another excellent Wood, uſeful for Whipſtocks, Cops of Carts, and Sidings; as alſo for any thing, that requires a ſtrong, tough, laſting Wood; but, above all, its Bark has of late been found famous for the making of Birdlime; the which, becauſe it may be grateful to the Country-man, not only in taking and deſtroying ſuch Birds as annoy his Corn, but to furniſh his Table, though it is ſomewhat a digreſſion from the Subject, I ſhall, however, by the way, give him a Receipt to make, and uſe it, and then come again to a concluſion of what I intend to lay down, in relation to the Ordering of Trees, and Improvement of Wood-lands, for his advantage.

CHAP.

CHAP. LVII.

A true Receipt how to make the best Bird-Lime.

WHen the Sap is full in the Bark of the Holly, about Midsummer, take that which is well grown, and strip off a considerable quantity of the Bark, and boil it in fair Water, till the gray and white Bark part from the green; so separate the green, and lay it on a heap on a Tyled, or Stone Floor, in a Cellar, or some such cool place, covered with Weeds, for the space of ten or twelve days: in which time it will putrifie, turning into a slimy quality; then put it into a Morter, and beat it with a wooden Pestle, till nothing but slime remain; so that no part of the Bark being to be discerned, it may be wrought like Wax; then wash it in a running Stream, that no moat or husk may remain in it; after this is done, kneed it into a glazed earthen Vessel, cover it close from the Air, and there it will fume up, and purge out, its scurf and dross; and, after six days, scum it off; and continue so doing till no more arise, then, that you may keep it for use, shift it into another clean Vessel

When you use this on Twigs, Straws, or Bushes, according to the quality of the Fowl you design to take, warm it, and mix it with a little Hogs, or Goose-grease, over a gentle Fire, till they are well incorporated, by frequent stirring; then anoint the Twigs, Straws, or Bushes, with it, as even as you can, without leaving any knobs, or roughness; and place them either in Woods, or Fields, where the Birds you intend to take resort; and place what Allurements you think fit, in Meats, or other Matter, as will be most taking to them, and place them so, that when they descend, they must needs touch them, and such as do will certainly be entangled; for if they rise with them on their Feet, they will certainly lap their

Wings, and that will cauſe them ſuddenly to fall: and, as the greater or leſſneſs of the Fowl is, ſo muſt you proportion your Twigs.

CHAP. LVIII.

Wonderful Improvement of Land, by planting Trees, and by Incloſures; ſhewing the advantage of it over thoſe Lands that lye in Common.

WOod may be greatly improved, by incloſing Ground with it, for Corn and Paſture; yielding a great many advantages to the painful Huſband-man, whoſe good Induſtry well deſerves a good Recompence.

Firſt, For that well-grown Trees, and good Hedge-rows, ſhelters his tender Corn, *&c.* from bleak Winds; and keeps off the blaſtings that would much annoy it, even when grown.

Secondly, It is a great advantage to Paſture-lands, in ſheltering Cattle, both in the heat of Summer, and in the extream of Winter; as alſo from violent ſtorms of Rain, Hail, or Snow, *&c.*

Thirdly, It ſecures Corn from High-roads being made into it by idle Perſons and Cattle; which, if it lay in common, or open, could not be avoided, ſince thoſe, that know not the toil and coſt the Huſbandman is at, to bring his Crop to a Harveſt, little regard what havock they make, through lazineſs, for wanton diſportment, or the neareſt way; which, if there were a Barrier of good Fence, they could not do: and then for Cattle, it ſaves the trouble of Pounding, and many friviloas Suits, that frequently ariſe on treſpaſſes of theſe kinds; and therefore is advantagious both to the owner of the one and the other.

Fourthly,

Fourthly, Trees growing up, their Lops afford much Fuel and Fencing, perpetually ſupplying the owner with both, as occaſion requires; and indeed few know the ſcarcity of the firſt, ſo well as thoſe that live diſtant from Incloſures, in open champion Countries, where Coals cannot at all, or at leaſt, without great charge and labour, be had; not only the pinching Winters afflict theſe, but even their neceſſary occaſions, of Brewing, Baking, and Dreſſing their Proviſion, make them ſenſible, to their great coſt and loſs of time, that the planting of Trees is extreamly beneficial, for that, being at hand, they may keep it in a readineſs, by getting it in, and laying it up to dry, at leaſure times, to their great comfort and advantages; and be profited in ſelling the overplus, to the rich, and charitably beſtowing ſome on their poor Neighbours; and, for their Chriſtian Compaſſion towards them, be loaded with their Bleſſings and Prayers: and of this, one Mr. *Tuſſer*, one very much experienced in Rural Affairs, in his old faſhioned Rhime thus ſpeaks:

The Wood-land above all I praiſe,
the Champion delighteth not me;
For nothing of Wealth it doth raiſe,
to ſuch as laborious be:
In Wood-lands the poor Man that have,
ſcarce fully ten Acres in Land,
More merrily live, and do ſave,
than th'other with forty in Land.
The one hath, in every Hedge,
both plenty of Fuel and Fruit;
The other lays Turf up and Sedge,
and gets it by wonderous ſuit;
And ready in Winter to ſtarve,
when th'other you ſee doth not ſo,
But has what is needful to ſerve,
when th'other all ragged does go.

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There is, indeed, a great difference in the advantage ariſing between Incloſures, or Wood-lands, and ſuch as lye open; and though ſome may be apt to grudge at the incloſing of Commons, yet, were there a good meaſure taken therein, it would greatly turn to the advantage of the poor, and much improve the riches of the Nation; there being ſo much good Land, lying as it were waſte, might be incloſed and let to the benefit of the poor; to the great eaſing of the Pariſhes, and advantaging thoſe that claim a right therein, three or four times more than what now it can; for the poor having little ſtock to put there, the rich make their advantage, who have much; which, if it was incloſed, and let out for the general benefit, they could not do; and ſo thereby the ſtock of Corn would be greatly advanced; and, in ſome Years, a good improvement of Timber might be made, many Commons and Moors, that now lye in a manner waſte, and are of little profit, being capable, with a little induſtry, of producing equal with Lands of a good value; ſo that things thus rightly ſtated, every one concern'd might have a right underſtanding, and be highly ſatisfied in ſo good a Work.

Conſider, in this caſe, where the Grounds are incloſed, how happily people live; as in *Hartford-ſhire*, *Eſſex*, *Kent*, *Berk-ſhire*, *Surry*, *Wilt ſhire*, *Somerſet-ſhire*, *Hant-ſhire*, and others; all which not only raiſe Corn for themſelves, but ſupply other open Countries, and even the great City of *London*, which conſumes a vaſt quantity thereof; and yet no parts of *England* ſet a greater rate, or make a greater advantage by Grazing.

Therefore I muſt ſay, that all Intereſts upon Commons, or Rights of Common-paſture upon any of theſe Lands, may, without prejudice to any particular Intereſt, be advantaged, and much improvement made to the Publick, conſidering what vaſt quantities of Land lye, as I may term it, waſte; ſome over-run with Mole-hills, Ant-hills, Goſs, Fern, Bryers, Twitch-graſs, and the like; others under Water, for the want of opening the Currents, and Paſſages for Brooks, or Water, deſcending from Hills; for, whilſt it lyes thus, every one concludes it not

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his buſineſs, and ſo it lyes neglected; and many, however, claim their part in it, that will beſtow neither coſt nor labour in making it fit for good Paſture, or Corn-land; though, if it was ſo ordered, it might prove in a little time, the enriching of them, and be a means to diſburden the Pariſh, by the Rents ariſing therefrom, of the chargeable Poor, and be a means to employ labouring Men; ſo that every one would live at eaſe from encumbrances, or ſuffering wants.

But this, ſome may ſay, cannot be done without great encouragement of our Superiors, or, at leaſt, the general conſent of all that have any right or claim in the many parts of ſuch Land by long cuſtom. Suppoſe this granted, as for the firſt, Thoſe that are called together, to conſu't the good and welfare of all the Peop'e of *England*, cannot be thought to be averſe to ſo great an advantage to the Publick, where Particulars are rightly repreſented and ſtated; ſince the Poor, reaping the Benefit, they being by far the vaſter number, it would be a great eaſement to the Nation, in employing many, and charitably ſupporting others: And, for the latter, I preſume, there are few, that would not be induced to ſtudy their own good and advantage.

CHAP.

CHAP. LIX.

Of Incloſures, and Trees planted in Hedge-rows, both Fruit, and others; and the benefit ariſing thereby to the Owners of ſuch Land, &c.

THere might be abundance of things ſaid in the encouragement of Incloſures and Woodland, beneficial to private Perſons, and the general good of the Nation, ſince ſo great a conſumption of Timber, and Underwood has of late been made, in building of Shipping, Houſes, in Iron-works, and Charcoal; which, if not in time repaired, will make this, or at leaſt the next Generation too ſenſible of the decay of it; and the want of theſe Neceſſaries, will much obſtruct the Trade of the Nation, as well as put private Perſons to great ſtreights.

The Earths proper in this caſe, may be choſen indifferently; but for Wood-land, chuſe a warm, ſandy, gravelly Ground, mixed with other Earth to temper them, eſpecially with a moiſt, ſtrong, cold Clay.

I have given divers Rules already for the meliorating Earths when they decay, or languiſh, by ſundry Manures, and therefore ſhall not be troubleſome to my Reader, in repeating what is already done; but where Incloſures are deſigned for Corn, by the way, that it is proper you make choice of a good, ſound, middle, warm Land, than of the richeſt, and fatteſt that is, and it will produce a great encreaſe, and the Timber about it will pretty well thrive, and grow up in time to great ſpreading Trees, though not over high, ſo that the Boughs will be very thick and ſubſtantial, and the great Arms ſerve for divers neceſſary uſes, as occaſion ſhall require them in Building, or other Matters; and the Spray-lops provide a ſufficiency of Fuel to ſkreen you from the cold: In the Hedge-rows you may likewiſe, to advantage yourſelf more, plant

Fruit-

Fruit-trees, which being well grown, will, with a little care, bear better than those planted in Orchards, as lying more open to the Sun, and altogether unincumbred by others; so that by the Fruit great profit will accrue, and the due pruning them will add to your stock of Fuel; besides, it will give a very pleasant prospect to the Ground, affording cool and delightful Umbrays in the Summer-season.

And this appears by Land already improved in this nature, in *Hertford-shire*, *Worcester-shire*, *Glocester-shire*, and other Countries; redounding to the great benefit of the Owners, who have, by this means, a double Crop yearly, one of Fruit, and the other of Corn, and a third may, in some cases, be brought to perfection; *viz.* of Turneps, or such like, that may be sown, ripe, and drawed, before the Season for sowing Barly comes on; by which means Land may be improved to a great value, or if laid down for Meadow, or Grazing, nothing can be more accommodating to Cattle, than a Pasture fringed with substantial Trees, spreading their Branches, as I have hinted, to skreen, by sheltering from Rain, Winds, Heat, or Cold.

This I speak to incourage Industry, and this Industry consequently encreases Wealth, which always commands a plenty of what is necessary; and, being once gained, takes off much of the toil and labour Poverty imposes on the needy; so that the Labour of youthful Years, may comfortably supply old Age; to do which, experience teaches us, it is very necessary.

It is allowed by the most judicious, that shadiness in Summer, and warmness in Winter, occasion'd by Trees, much helps and betters the Land; for in such Fields we find the earliest Grass, and frequently the greatest Swath and Burthen, and consequently more Corn than in open places, exposed to bleak Winds in Winter and Spring, and the Sun's hot Beams continually lying on, and parching them in Summer, from Morning till Evening-tide: Hills indeed, may reasonably keep off some Winds, and make them fly over the Champion-ground; but I cannot conceive we have any that cast so large a Shade, especially

ly in Summer, when the Sun, as it were, in a manner, runs burning over our Heads, that give any tollerable ſhelter from its Beams at Morning or Evening, which Trees, growing near about the Ground, will infallibly do, and in ſome parts, or places, all the day long to good advantage.

This Ground will feed more Cattle, and ſooner fatten them, than that which lyes open and expoſed to the Weather; and certainly, where Trees are formerly planted, and grow not too thick, none can ſee reaſon to the contrary of what is ſaid: As for Land, I know very much, if not moſt of it, that was worth not above ten Shillings an Acre, ſome leſs, now the Graſs of moſt of it thus encloſed, and planted, is three times advanced, or more, the Fruit growing in the Hedge-rows, and Avenues, overpaying the Rent, and the Crop entire to the Owner.

But ſay the Land were worth twenty Shillings an Acre, or more, this will cauſe the Trees better to proſper, and produce a greater Crop, and the leſs coſt in manuring or ploughing may be beſtowed on it.

If you ſet rows of Trees, either Fruit or others, in the middle of your Fields, at ſuch diſtance as not to hinder the Sun from bringing forth the Graſs, or ripening the Corn, it will yet turn to a greater advantage, as four, or ſix fold, and make the Huſband-man, in a little time, rejoyce in his labour, and ſo much Land now of little worth may be very much improved; and if ſo it happen, that one Crop fails in a Year, it is not morally poſſible that both ſhould; and ſo one hitting, will, however, make you ſavers, and rather more, by a great deal, if it happen any thing to the purpoſe.

Theſe things may be done without much toil, or coſt, and prove in a manner a recreation to the induſtrious Farmer, or his Servants, at leiſure hours; and Plants and Grafts may be had out of his own Nurſeries, or Orchard, where the thick, growing together, encumber one another; and, for other Trees, every Wood, or over-encumbred Hedge-row, afford a ſufficient ſtore, or if a Man at firſt be unprovided, at little coſt he may be furniſhed; and then, having of his own, he may improve and multi-

ply

ply a few to greater numbers, till his encreaſe is ſufficient to ſupply himſelf, and others, to a very conſiderable degree. So that all things being well conſidered, thoſe that are deſirous to do well for themſelves, or for their Poſterity, will hearken to what I have laid down, that ſo Wealth and Plenty may encreaſe to them, and, by ſo doing, they may incite others to imitate them.

CHAP. LX.

Reaſons for Incloſures and Wooding of Land, both for the private and publick advantage; and the Objections made againſt them anſwered and confuted in many convincing Particulars.

HEre, to draw near a concluſion of the Subject-matter of this Book, I come to anſwer a main Objection againſt Incloſures, and ſhew the advantage of them; but, the more ſmoothly to come to it, I affirm, that very many Waſtes, Forreſts, Moors, and Common-fields, as they are now enjoyed, through the oppreſſion of the Rich, and ſloth and idleneſs of the Poor, and miſuſage of all, are of little advantage to the Publick, being Commonable at random; nay, whether they are not worſe than nothing, ſome Years yielding a little profit and encreaſe, which in other Years is clearly ſwept away, old Stock and all.

I know, upon ſome Common-fields, the Poor are forced to more charges in keeping their Cows, Horſes, or Sheep, than would keep them in good Paſture, without any care or trouble, it being the daily buſneſs of one Perſon to tend two or three Cows, *&c.* for fear of breaking into other Mens Grounds, and ſo occaſioning litigious Suits by treſpaſſes, whilſt the party tending them, might, at indifferent Labour, earn more than the graſing in good Paſture would amount to, and prevent all fears and dangers, by being en-

encloſed within good Fences, not only of their ſtraying, but of troubleſome borderers on Commons, &c.

Now the Objections is, If this were not, how ſhould ſo many poor Men, Women, and Children, be imployed; now one Town maintains many great Families, and many Families live upon the Common, which then muſt ſhift, and go a begging?

Now, that I may mannage this Objection to the purpoſe, the great *Romera* to this Improvement (all other Objections ſeeming to me, in compariſon to this, as nothing) moſt Men herein being much beclouded, and very many wiſe Men ſo charitably bewitched herewith, I muſt therefore demand,

Firſt, How theſe People live? Why, truly, in a very mean, low condition; at hunger and eaſe, for the moſt part; and for the beſt of them, they live an uncomfortable, moiling, and drudging kind of Life; what they get, they ſpend; Plough, Sow, and Reap, and all to bring the Rear about, and well if they can make even at the Year's end; and this kind of miſerable living they ſeem to be contented with, becauſe they cannot better themſelves.

Secondly, As aforeſaid, many of theſe People are employed, but to loſs, and very great loſs too, when their Pains and Charges is far greater, in keeping their Cattle and Herds by Corn-fields, in the High-ways and Lanes, than that they might have them paſtured for.

Thirdly, What are the People fitted for hereby? Why Idleneſs, and an averſion to Induſtry; and as it were render themſelves uſeleſs to the Publick, living altogether in ignorance, having little regard of their Souls or Body.

Fourthly, Now Incloſures will bring far more advantage, if ſome, by diviſions, would lay the Land both warm and dry; others by quick-ſetting and planting Woods of many ſorts, Fruit-trees for Perry, and Sider, or Garden-roots; improving ſome Lands by watering, others by draining; and again by Corn, upon perfect and compleat Tilth and Soiling, which none will wave, it always bringing great profit, which may be done by thoſe Hands, that are to little or no purpoſe employed on Commons: other Lands

might

might be improved, as I have already directed, by Flax, Hemp, Clover, or the like, and all other means held forth in this Diſcourſe, whereby they may be really ſerviceable to their Generation.

And this I affirm, That many more People may be employed this way than now are, and to double advantage, and none but the oppreſſor can be grieved at it, or any way prejudiced; and for ſuch a one, it matters not.

Fifthly, Take a ſurvey of all Incloſures, and take in whole Countries, and you will find more Wealth, more People, and every thing more plenty.

Laſtly, For thoſe who meerly live upon the Commons, if they have a proportion allowed them to themſelves, as all honeſt People deſire they ſhould, I am confident it would wean a great many from their idleneſs, and pilfering way of living, to do what work is neceſſary; out of which will ariſe Incloſures, and the profits accruing thereby will give them ſuch an opportunity of full employment, that they will have a juſt cauſe to rejoyce at the happy change of their condition ſo much bettered.

Now I grant, as it is but reaſonable I ſhould, that all Common cannot be aptly incloſed without prejudice to the Poor, who muſt be removed on that account, unleſs better proviſion in the mean while can be made for them, and the few Cattle they have; which is to be conſidered but in a very few places, and may well be ſtinted, or limited, to a ſet number of Cattle, and ſuch a number too as the Land will maintain to the beſt advantage; this might in ſome few caſes help, but in the generality little avail; becauſe feeding barely to keep Cattle alive, is no great matter of advantage; but ſuch feeding where they may increaſe, thrive, and grow fat, is that which can beſt profit the Owners, and alſo the Publick; and this cannot be where Ground, that is but poor of itſelf, is over-ſtocked; for then, by penury and want, Diſeaſes get among Cattle, as Murrains, Rots, and abundance of others, which in a ſound well-manured, and plentiful Paſture are ſtrangers; ſo that, by ſuch Caſualties, a poor Man may at once loſe all he has to depend on, and ſo be brought to want and beggery never, by his Labour, in his life-time perhaps, being able

able to recover the loſs of one fatal Year. And ſo, hoping none, from the higheſt to the loweſt, will have cauſe to cavel at theſe things, eſpecially if time be taken rightly to digeſt and conſider the Propoſitions as they ought, I conclude theſe Points, and proceed to other Matter that may be advantagious to the induſtrious Farmer, and others, who take any pleaſure to delight, or advance their own Intereſt in Rural Affairs; for, intending to make the Book a ſufficient Guide to all, I purpoſe to omit nothing, that may in any tolerable manner be conceived reaſonable to profit any, it being a Work indeed that was never before compacted to any purpoſe, in one Body, and therefore being now reduced to ſo ſmall a Volume, it cannot but prove grateful to thoſe more particularly whoſe curioſity, or induſtry leads them any thing this way, and may be a main Inſtrument to ſtir up Publick Spirits, to conſider the Publick Good and Welfare of the Nation, in imploying their Purſes and Skill in promoting what conſequently will abundantly produce Riches and Plenty.

Reader, *I ſhall here a little further treſpaſs upon you, to let you know how to take or deſtroy other Creatures than what I have mentioned, that are great Enemies to Corn and Under-woods, Clear-waters,* &c. *which may turn to your profit and pleaſure, in the proper Seaſons, after your Toil and Labour.*

CHAP.

CHAP. LXI.

How to take the Stag, Buck, Hare, Fox, Badger, Wild-Goat, and Otter, which deſtroy Corn, Underwoods, &c.

THE Stag is the moſt Princely of all Games; and when you go about this, to know whether he be old or young, obſerve the Prints of his Feet where he has tracked the ſoft Ground; and, if it be large, with a thick Heel, open Cleft, long Space, and a deep Print, he is certainly old; but, if the contrary, you may venture upon him for a young one.

And the principalleſt Quality being to know at all Seaſons where to find this Game, obſerve this Rule, *viz.* In *November*, ſeek among the Whines, thick Shrubs, or Turfs; in *December*, in thick Woods; in *January*, he is likelieſt to be found in the Corn-fields; in *February* and *March*, among the thick young Buſhes; in *April* or *May*, in Copices, or near Springs; in *June* and *July*, in Out-woods, and the Purlews on the Edges of Corn-fields; in *September* and *October*, after the firſt Falling-ſhowers, he goes to rutt.

When you are in ſearch of him, go againſt the Wind, that he may not ſcent you, and haſtily remove. Sun-riſe is the beſt time to find him, when, having watched him to his Lare, you may aſſuredly find him there till the Evening, unleſs rouſted by ſome Affrightment.

As for the manner of hunting him: When you approach ſomewhat near, ſend out your Finders; and when they have hunted about a Ring or two, caſt in the reſt of your Hounds, and chear them with your Horn and Voice, when they are at Full Cry on the Main Chaſe; and take ſpecial notice of the Stag, that you may know him, if your Dogs ſhould follow a wrong Game, that you may call them off, and ſet them back to their Default, making them

them caſt about again till the firſt Game is again undertaken, and then chear them as before; and have a watchful Eye he beat not up another Stag; for the Stag hunted, being imboſſed and wearied, will, if he can, beat up another, and, lying down, ſkulk cloſely in his place.

You may perceive when he is weary, by his ſlavering and frothing of his Mouth, much Sweat, ſhining and blackneſs of his Hair, and often lying down; and for his laſt Refuge, he will betake himſelf to Ponds, Brooks, Rivers, or any Stream, out of which he muſt be forced by Strength or Policy; and ſo you having the Game you ſought for, are at the end of hunting him.

Of the Buck and Hare; the manner of finding them, &c.

AS to the Buck, your buſineſs is to take your Meaſures according to the Advantages or Diſadvantages of the place where the Buck is imparked, or in Chaces; and this is more eaſie to be taken than the former: And if you can hunt the Stag well, by the ſame Rules, with leſs Trouble, this may be run down.

But what is moſt the honeſt Countryman's Sport, is, the Hare; and therefore I ſhall be large in my Directions upon her, as to the finding and running her down.

If you ſeek her in Champion Countries, you muſt beat the moſt likely Buſhes and Covertures; as, Brambles, Brown Graſs or Brakes: And if there be no ſuch Shelter in the beginning of Hunting-time, repair to the Stubble and to the Fallows about *Chriſtmas*; but in *March*, to the Green Corn, which are her moſt likely Haunts; eſpecially of the largeſt and beſt Hares.

There is another Rule to be taken in finding the Hare, and that is, to repair to her former Seat, and obſerve whether it is new or old; if it be plain and ſmooth, and the Pad before it worn and flat, and the Pricks new, eaſie to be ſeen, and the Earth appear black, as if it were juſt broken, then it is new, and ſhe is not gone ſo far from it, but you may expect her to return: But if the Marks appear

pear otherwiſe, then conclude ſhe has left it for a conſiderable time; and if the Hounds have taken any Scent, and open, then call them off; for unleſs a Hare accidentally ſtart, you will loſe your Labour.

The Hare has Slights almoſt more than any Creature that is uſed to be hunted; for ſhe will make many Doublings and Windings to avoid the Purſuit, which you muſt well note and obſerve, or you may chance to loſe her; therefore you muſt at every Default give your Hounds Scope and ſufficient Leaſure in caſting about their Rings for the Windings of them; and after this, obſerve her Leaps, and the Skips which ſhe makes, before ſhe quats; then with your Pole beat the places where ſhe is moſt likely to ſhelter; for being reduced to theſe neceſſitous Shifts, ſhe is at her laſt Caſt, and has but a little time to ho'd out, nor can be long out of your Poſſeſſion. And thus much for all that is material in Hunting the Hare, as far as Directions can be given in Print.

Of the Fox, Badger, and Wild-Goat.

THE taking the Fox, Badger, and Wild-Goat, are other Recreations in ſome places of this Kingdom highly in Eſteem; and there is very good Sport to be found in it, though the Quarreys are of no Value, except their Skins.

As for the Fox, he is a ſubtile cunning Creature, not eaſily to be circumvented; his Reſting-place is generally in the Ground, or ſome hollow Tree, but moſtly in the former; and when once he's unkennel'd, ſtop up the Hole, and caſt in your Fox-dogs, who by reaſon of the ſtrong or burning Scent he leaves behind him, cannot miſs, if once they have taken it, to follow him in the right Track; keep him, if you can, from getting into the Woods; mark his Mocks, Wiles, and Leaps, that ſo you may be the abler to deal with him, though he be a ſtrong one: He will lead you a weary Journey over Plains and Hills before you can run him down; and if he earths, you muſt ſend in your Tarrier after him, if the Hole

Hole be wide enough, or elſe dig him out. His Haunts are ſo uncertain when he is a roaming, that Directions cannot well be given about it; and you may ſooner light on him by chance out of his Hole, than when you go purpoſely to look for him; and that will be by the Dogs happening to light on the Scent, which is very ſtrong.

The Badger is a kind of Wild-dog, living in Ground like the Fox, but not ſo hurtful to Cattel and Poultrey: His Haunts and Coverts are uſually in Woods or buſhy places. The Dogs muſt be hardy and bold that venture on him; for he is ſtrong, and a very ſhrewd Biter; and, for the laſt Refuge, when almoſt run down, haſts to his Hole; but finding it ſtopped, as it muſt be, if you intend to take him, he will ſet himſelf againſt it, and fight very courageous, even to Death. He is a Heavy Creature, and by the Unevenneſs of his Legs, as ſome allow it, of no ſwift Flight, and therefore ſoon overtaken in the Purſuit.

As for hunting the Wild-Goat, it is much uſed in *Wales* on the Mountains, but a very dangerous Exerciſe to purſue among thoſe ſcraggy Rocks. This is a Creature that is not in thoſe ſteep places eaſily taken; for neither Dogs nor Men in ſome places can follow her, where ſhe will run on the ſides of the Rocks like a Cat; ſo that, hallowing and making a noiſe with Horns, they watch at her Bolting-places, or ſteep comings down, and ſo ſeize her with the Dogs; and if it be a young She-Goat, this hunting will render her as tender as Veniſon.

Of the Otter.

THis Otter is a Creature that lives as well by Water as Land, and is a great Devourer of Fiſh. Having ſet her from her Holes in the Banks, if you can keep her on the Land, ſhe is preſently taken; but upon any Fright, if poſſible, ſhe will take the Water, eſpecially being purſued; and if the Dogs be good, they will purſue her there, and dive after her, till ſhe comes to vent, and then her beſt is paſt; for then, if the Water be not

too

too deep for Horſes to enter, ſhe may be eaſily ſtruck with an Otter-ſpear, and taken.

As to the taking of other Creatures, that are great Enemies to the induſtrious Huſbandman, Farmer, *&c.* in their Corn, Underwoods, Fiſh-ponds, Rivers, and other things, I, for Brevity's ſake, refer you to my *Vermin-killer*, in my approved Book treating of *Domeſtick Cattle*, and many other profitable things.

THE

Countryman's Almanack:

SHEWING

Many things neceſſary and profitable to be known in relation to Weather, *&c.* And what is proper to be done in Rural Affairs, in many Particulars, throughout the Twelve Months, *&c.*

Signs of Weather. And Firſt, Of Rain.

THis is to be obſerved by the Face of the Heavens, and divers Creatures, *viz.*

When the Sun ſhews broad in riſing, as through a Miſt, and has a Circle about it.

When it ſets in a black or dusky Cloud, and ſcatters pale and watery Beams.

When the Moon is pale, and blunt-horned, near the Change.

When a red Morning changes to grey, or marble-coloured Clouds, ſuddenly being overcaſt.

When the Wind often ſhifts and changes, and holds long in the South.

When the Stars are dull, and Circles ſeem to appear about them through the thickneſs or groſſneſs of the Air, when little ſcattering Clouds appear at Northweſt in the Evening.

When

When the Crow flies low, caſting his Head often upwards, and makes an unuſual Noiſe; when Cattle often look upward, and ſnuff the Air ſometimes, lowing heavily, and making towards Shelter.

When the Sea-Pies fly low, and dip, as it were, into the marſhy Waters or Rivers, making a great Noiſe.

Signs of Fair Weather.

WHen the Sun riſes bright, and Miſts are on the Water, and the Rain-bow appearing after a Shower, ſhews very light in the Azure or bleuiſh part.

When the Sun ſets red, and caſts direct Beams; and there are Webs flying in the Air, or contracted by the Vapours on the Graſs.

When the New Moon is ſharp pointed, and ſhines very clear; when the Clouds look clear, and are tinctured about the Edges with a golden Colour, the Sun being skreened behind them.

When Birds of Prey fly very high, and Cattle graze freely, without looking up, or ſeeming to be diſturb'd.

When Owls cry clear in the Night, and have no kind of Stammering in the Noiſe they make.

If in Summer, obſerve the buſineſs of the Bees, and how far they fly from their Hives; for if they apprehend either Rain or Storm, they ever keep near about their Homes.

Signs of Windy Weather.

EXpect Winds to ariſe when Sea-fowl begin to flock to the Shoar.

When there is a ruſhing Noiſe heard in Woods, without any feeling of Wind; for that is a Sign the Vapour is ariſing out of the Earth, and the Air is already ſeized with it, that ſoon will create ſtrong Winds, if not violent.

When a dusky Redneſs appears in the Moon and Sun, and Meteors by Night thwart the Skies, expect the Approach of great Winds.

When the Sea-Waves bear with a hollow Noiſe againſt the Rocks, and ſounds as it were at a diſtance, and the ſwelling ſeems high and bright, then Winds are gathering.

When a Red Morning ſuddenly changes, and the Wind thereupon ſhifts its Quarter or Point, then expect the Wind will ſuddenly ariſe.

Signs of Froſty Weather.

IT ſignifies Froſt, when the Sun ſets red in the Winter, and the Air is clear or miſty at a diſtance.

When the Stars ſhine bright, and twinkle much, ſeeming to ſend Darts and Rays to the Earth.

When the Moon in Winter is ſharp-pointed, and a bright Circle, though very ſmall, encompaſſes her.

When Meteors glide Northward, and the Wind often veering, ſettles in a cold Point; for then it will there continue long without Alteration.

VVhen Stares, Feldifares, and other Birds, uſed to cold Countries, flock towards the South.

VVhen Cattle turn their Tails to the Northward, and ſtand as motionleſs for a conſiderable time, holding down their Heads, without regard to grazing.

Signs of Snowy Weather.

VVHen in a VVind the Clouds move ſlow and heavily, and ſeem of a dusky white in the middle; and where any broken parts are fleecy and whiter at the Edges.

VVhen there is a ſpreading of the Clouds of one Colour grey and dull, and the Earth appears to be darkly ſhadowed.

Signs

Signs of Hail.

IT is a Sign of Hail when the Sky is ſuddenly overcaſt and there is a noiſe of ruſhing heard in the Air, cauſed by the Vapours of contrary quality being cloſed in the Clouds, which ſtrive to break and ſhiver into Particles the ponderous Body of congealed Vapours preſſing towards the Earth, which is its proper Center: And as the Cold is greater or leſſer, ſo are the Hail-ſtones: And this moſtly happens in the Spring and Summer, becauſe the Vapour is more forcibly ſent up; ſo that reaching the cold Region, it is frozen there; which in VVinter, the Vapours being thinner or flagging, do not, and therefore are convertible into Driſle or Snow.

The Meaſure of Time.

THE Meaſure of Time ariſeth from Minutes, and of theſe 60 make an Hour, 24 Hours a Natural Day, 7 Days a VVeek, and 4 VVeeks a Month, 13 ſuch Months 1 Day and 6 Hours a Year; but this Year is uſually divided into Twelve Calendar Months: However, their number of Days are many of them unequal, as in the following Verſes:

Thirty Days hath fruitful bearing September,
Moiſt April, *hot* June, *and cold* November;
Short February *Twenty Eight alone,*
The other Months each claimeth Thirty One:
And February, *when its fourth Year's run,*
Does gain a Day then from the travelling Sun.

So that by this Rule *February* every Leap-year has 29 Days, and that Year muſt conſiſt of 366 Days, being a Day more than others.

The Year is again divided into 4 Quarters, *viz.* The Feaſt of the Annunciation of the Virgin *Mary*, *March* 25.

The Feaſt of St. *John Baptiſt*, uſually called *Midſummer-day*, *June* 24. The Feaſt of *Michael* the Archangel, *September* 29. The Feaſt of the Nativity of our Bleſſed Saviour, uſually called *Chriſtmas*, *December* 25.

And now, by reaſon there are ſome Days that vary and move, falling higher or lower, according to the Change of the Moon, as *Shrove-Sunday*, *Eaſter-day*, *Aſcenſion-day*, and *Whit-Sunday*, I ſhall give my Reader an Account how they fall out as to the exact Days of the Month, from this Year 1697. to the Year of our Lord 1703. and of the Movable Terms to the like Date of the Year.

Year.	Shrov.Sun.		Eaſter-day		Aſcent.day		Whit-Sun.	
1697	*Febr.*	14	*April*	4	*May*	13	*May*	23
98	*March*	6	*April*	2	*June*	2	*June*	12
99	*Febr.*	19	*April*	9	*May*	18	*May*	28
1700	*Febr.*	11	*March*	13	*May*	9	*May*	19
01	*March*	2	*April*	20	*May*	29	*June*	8
02	*Febr.*	15	*April*	5	*May*	14	*May*	24
03	*Febr.*	7	*March*	28	*May*	6	*May*	16

	Eaſter Term				Trinity Term			
Year.	Begins		Ends		Begins		Ends	
1697	*April*	17	*May*	17	*June*	4	*June*	23
98	*May*	11	*June*	6	*June*	24	*July*	13
99	*April*	26	*May*	22	*June*	9	*June*	28
1700	*April*	17	*May*	13	*May*	31	*June*	19
01	*May*	7	*June*	2	*June*	20	*July*	9
02	*April*	22	*May*	18	*June*	5	*June*	21
03	*April*	14	*May*	10	*May*	28	*June*	16

Obſer-

Obſervations of things produced by Natural Cauſes, as Blazing-ſtars, &c. and the Cauſes.

COmets or Blazing-ſtars, ſo affrighting to the World in their Appearance, becauſe they are frequently the Forerunners of dreadful Conſequences, as War, Famine, Peſtilence, *&c.* proceed from no other than Natural Cauſes; as, the aſcending of unctious Vapours gathering in a Body in the Superiour Region, and there by their near approach to the Region of Fire, and the Influence of the Stars, are agitated into a Flame, which, when the Sun-beams are excluded from it by the Shadow of the Earth, appears like a Star. Theſe Comets or Blazing-ſtars are held to betoken Droughts, Barrenneſs of the Earth, and Peſtilence.

Droughts, becauſe a Comet cannot be generated without great Heat; and much Moiſture is conſumed in the burning of it.

Barrenneſs, becauſe the Fatneſs of the Earth is drawn up where the Comet conſiſteth.

Peſtilence, forſomuch as this kind of Exhalation corrupteth the Air, which infecteth the Bodies of Men and Beaſts.

And indeed, it is generally noted by Hiſtorians, that after the appearing of Comets, great and notable Calamities befal Mankind; as indeed is not now out of the Memory of Man, as thoſe that appeared in 1665. before the Great Plague, *&c.*

Of Stormy Winds.

A Stormy wind is a thick Exhalation violently moved out of a Cloud without Inflammation or Burning.

The Form and Manner of its Generation, is, when abundance of hot Exhalations are generated in a Cloud, which forcibly breaks out when it is ſwelled to its Bulk.

It always goes before a violent ſudden Shower; for when the Cloud is rent, as it were, in pieces, the Water muſt conſequently fall down alſo; it is ſo groſs and ſo thick, that it darkens the loweſt Region of the Air, and brings with it a kind of a Night; and the Winds are uſually fatal to Mariners, cauſing Shipwrecks, and many other Calamities.

Ignis Fatuus, *or Fooliſh Fire.*

THis is uſually by the Country-People called *Will with a Whiſp:* It is a Lucid Vapour ariſing from Mooriſh places, not capable of aſcending but a little Degree above the Earth, as being ſhut in by the cold Autumnal Air; yet when the Air is ſtirred by any one's moving towards it, it preſſes forward and backward, and ſeems to dance about a Man; ſo that the Darkneſs of the Night, joined to Fear, has ſo amazed the Minds of many, that they have wandered out of their way into Ditches, Ponds, or Pools, or wandered till Day-light, which a compoſed Mind would with eaſe have prevented.

Of the Eclipſes of the Sun and Moon, with their true Cauſes.

THE Sun, the chief Planet of Light, much greater than the Earth, or any other viſible Body, making its Courſe through the 12 Signs of the Zodiack in 365 Days properly, and in 24 Hours encompaſſes the Earth; and by its kindly Heat is, under God, the Nouriſher of Plants, Trees, Flowers; and indeed, all Created Beings on Earth partake of its Virtues: Yet this Illuſtrious Body is ſubject to be Eclipſed; for when the Moon is in Oppoſition to it, its dark Body ſhrouds the greater part of its Light from us for a time, till paſſing on in differing Tracts, they diſengage; and then the Brightneſs of the Sun, if not hindred by Clouds, appears to us the more perſpicuous.

The

The Cauſe of the Moon's being Eclipſed, which happens always a little diſtant from the Full, is the Interpoſition of the Earth's Shadow between her and the Sun-beams; for, riſing like a Pyramid, it reaches her opacous part; and ſhe being a Body of herſelf without Light, can give no Reflection of the Sun-beams, till paſſing on, ſhe recovers the refreſhing of its Light: And though many from theſe Contingencies make ſtrange Prognoſticks, yet, proceeding from Natural Cauſes, I think they ſignifie no great matter as to Tranſactions on the Globe of the Earth.

Of Whirlwinds.

A Whirlwind is a Wind burſting out of a Cloud, breaking or rowling round about, often overthrowing that which ſtandeth in its way, by reaſon of its innate Violence, carrying things not exceeding ponderous aloft with it in the Air.

The Matter of a Whirlwind is not much differing from the Matter of Storm and Lightning, that is an Exhalation hot and dry, breaking out of a Cloud in divers parts of it, which occaſions the blowing about; alſo, it cauſes the Air to imbody againſt its Violence, and ſo breaking through, it comes with the greater Force.

Of the Rainbow.

THE Ground or Reaſon of the Rainbow, is only the Sun's Reflection on a hollow Cloud, which, the Edge being repelled and beaten back againſt the Sun; from thence ariſeth the ſo great Variety of Colours, by reaſon of the mixture of Clouds, Air, and Fiery Light together. Thunder and Lightning are cauſed, when hot and dry Vapours mixt with Moiſture, are exhaled up into the middle Region, and there exhaled into the Body of a Cloud: Theſe two Contraries not agreeing together, break forth with great Violence; ſo that the Fire and

Water break forth of the Clouds, making a roaring Noiſe, which we call Thunder; and the Fire lighting, the Thunder is firſt made, but the Lightning firſt ſeen, in regard the Sight is quicker than the Hearing: Which to prove, obſerve at ſome diſtance, when a Man is cleaving of Blocks, or a Carpenter hewing a Log, and you ſhall ſee the Fall of the Beetle or Ax ſome little Diſtance of Time before you hear the Noiſe of the Blow. Now of Lightning there are many ſorts; that which is dry burneth not at all, but diſſipateth and diſperſeth itſelf: Likewiſe the moiſt burneth not, but blaſts, and changeth the Colour: But the clear is of a ſtrange Property; for it melteth the Sword, and ſingeth not the Scabbard; it draweth Veſſels dry, without hurt to the Veſſels. Some rich Miſers have had their Silver melted in their Bags or Purſes, and yet neither Bag nor Purſe hurt; nay, not ſo much as the Wax that ſealed the Bag ſtirred: It breaketh the Bones, and hurteth not the Fleſh; and killeth the Child in the Mother's Womb, not hurting of the Mother. What great Cauſe have we then to pray, as it is in the Litany, *From Thunder and Lightning, good Lord deliver us?* Sundry things are not hurt by the Lightning; it entereth not above five Foot into the Earth, it hurteth not the Lawrel-tree: Such are freed as are ſhadowed with the Skins of Seals, or Sea-Calves. The Eagle likewiſe is Lightning free. *Pliny* ſaith, *Scithia*, by reaſon of Cold, and *Ægypt*, by reaſon of Heat, are ſeldom moleſted with Lightning.

Of the Nature and Properties of the Seven Planets.

Saturn (the higheſt of the Seven) being well affected, is grave with Authority, ſtudious of great Matters, a Lover of Secrets, full of Labour and Toil, covetous and ſtudious for his own Benefit, unconſtant in his Word, ſolitary and a Lover of Huſbandry, a great ſcraper together of Wealth, being ill affected; he is fearful, ſad, envious, ſuperſtitious, deceitful, ſloathful, thoughtful of baſe things, malignant, dull, and a great Liar. *Jupiter* (the only Siguifier) being well affected, ſtirreth up Men to Honeſty,

Honeſty, maketh them religious, juſt, heroick, faithful, and magnificent; famous Governours, grave and wiſe, ſtudious in their Buſineſs, careful of their own, liberal upon diſcreet occaſions, without Diſſimulation, but being ill affected, unfortunate and weak; he is given to Pride and Prodigality. *Mars*, well affected, is valiant, ſtrong, unfearful, deſirous of Revenge, impatient of Wrong, generous, fit for Government, boaſting, and not regarding Riches; being contrarily affected, he is unjuſt, cruel, a Tyrant, proud, raſh, turbulent, a Blood-ſhedder, and an Author of all Diſſentions and Diſcords. The moſt noble Planet is *Sol*, being well affected, ſignifieth Kings, Princes, Potentates; he is heroick, induſtrious, provident and ambitious, delighting in Wealth, valiant, ſecret, quiet, and honeſt: He giveth long Life, and a ſprightful Body, a judicious Mind; he giveth Honours, Dignity, and Riches; and (which is moſt of all) he maketh Men famous and deſirous of Honour. *Venus*, being fortunately affected, maketh one beautiful, pleaſant, fair-ſpoken, delighting in gorgeous Apparel, eloquent, pitiful, apt for to pleaſe, ſociable, excelling in Muſick, impatient, reſerved, but, being ill affected, ſhe is libidinous, a Lover of Lovers, idle, jealous, ſluggiſh, regardleſs of Fame, fearful, and prone to all Evil. *Mercury*, well ſeated, maketh one wiſe, ſtudious, and apt to all Learning; cunning, ſubtile, and wary; skilful in Poetry, Geometry, and the Mathematicks; given to Law, deſirous of Differences, and Eloquence in Diſputation; but, being unfortunate, he is malicious, ſubtile, crafty, forſworn, and a deſperate Liar. *Luna*, or the Moon, cauſeth one to be unſtable, faint-hearted, fearful, a Vagabond, and prodigal; ſhe delighteth in the Study of Romances, to walk from place to place, to travel far Countries, and to plant Herbs and Trees; ſhe alſo ſignifieth Meſſengers, Sea-men, Ladies, Fiſhers, and all ſuch as be in continual Motion.

The

The Unfortunate and Fatal Days in the Year.

THE ancient Aſtronomers have obſerved certain Days in every Month to be held fatal and unfortunate, in which they accounted it ominous to begin, or undertake any Affairs; which Days are theſe:

January 1, 2, 4, 5, 10, 15, 17, 19.
February 8, 10, and 17.
March 15, 16, and 21.
April 16 and 21.
May 7, 11, and 20.
June 4, and 7.
July 15, and 20.
Auguſt 19, and 20.
September 6, and 7.
October 5.
November 15, and 19.
December 6, 7, and 9.

Furthermore, they will have in the Change of every Moon two unfortunate Days, in which they recount whatſoever thing is begun late, or ever done, it ſhall come to no good.

In *January* the 3 and 4 Days of the New Moon.
In *February* the 5 and 7.
In *April* he 5 and 9.
In *March* the 6 and 7.
In *May* the 8 and 9.
In *June* the 5 and 15.
In *July* the 3 and 19.
In *Auguſt* the 8 and 13.
In *September* the 8 and 13.
In *October* the 5 and 12.
In *November* the 5 and 9.
In *December* the 3 and 13.

Again,

Again, there are ſome that prick out of the whole Year ſix moſt unfortunate Days above all other, wherein they adviſe no Man for to bleed, or take any Drink, becauſe the Effects of the Conſtellations work mightily to Death; and in other Reſpects, that they might be unfortunate. They are, *January* the 3d, *April* the 30th, *July* the 1ſt, *Auguſt* the 1ſt, *October* the 2d, and *December* the 31ſt.

Moreover, there are certain unfortunate Days in the Year, call'd *Dog-Days*, which are accounted very prejudicial to Health: They begin the 19th of *July*, and end the 27th of *Auguſt*; the Malignity of which Days *Pliny* diſcourſeth of, *Lib.* 1. *Cap.* 40. in his Natural Hiſtory. Likewiſe, throughout *England* the 28th of *December*, being *Innocents-day*, called *Childermas*, or *Croſs-day*, the People reſent as an unfortunate Day.

There are other ſhort Obſervations for each Month in the Year, which I have thought fit to affix, though of different Effects. If the Sun ſhine the 12th of *January*, there ſhall be ſtore of Wind that Year. If it thunders upon *Shrove-Tueſday* in *February*, it ſignifieth Wind, ſtore of Fruit, and Plenty, the Sun-beams being early abroad; and ſo much as he ſhineth that Day, he will ſhine in the ſame manner every Day in *Lent*. So many Miſts as there be in *March*, ſo many hoary Froſts will be after *Eaſter*. If it rain on the *Aſcenſion-day*, (which moſt commonly falleth in *April*.) it doth betoken Scarcity of all kind of Food for Cattel; but being fair, it ſignifieth Plenty. If the Sun ſhine upon the 25th of *May*, Wine will proſper well: Alſo in the End of *May*, if Oaks begin to bear Bloſſoms, it doth foreſhew much Tallow and Fruit. If it rain the 24th of *June*, Hazel-nuts will not thrive. If it be fair three Sundays before St. *James*'s-day, Corn will be good. If the Wind change upon St. *Bartholomew*-day at Night, the following Year will not be fruitful. In *September*, ſo many Days old as the Moon is on *Michaelmas*-day, ſo many Floods will be that Winter. In *October*, if Leaves hang on the Trees, it portends a cold Winter, and many Caterpillars. *November* 10th, if on that Day the Heavens are cloudy, it prognoſticates a wet Winter. If

Chriſtmas-

Chriſtmas-day come in the New of the Moon, it is a Sign of a good Year; and ſo much the better, by how much it is nearer the New Moon; the contrary happeneth it its Decreaſe.

I have inſerted theſe laſt Obſervations, rather to pleaſe ſome conceited old People, rather than any ſhould be induced to give any certain Credence to them; nor ſhall they want their old Story of St. *Paul*'s Day:

If St. Paul *be fair and clear,*
It doth betoken a happy Year:
But if it chance to Snow or Rain,
Then will be dear all kind of Grain:
And if that Winds they are aloft,
Then ſhall we hear of Wars full oft:
And if it do Thunder that Day,
Great Dearth ſhall be, as wiſe Men ſay.

Another old Saying.

When our Lord doth lie in the Virgin's Lap,
Then, Oh England, *beware of a Clap.*

The Names and Properties of the Twelve Winds.

THE Wind is an Exhalation hot and dry, ingendred in the hollow Concavities of the Earth, which breaking forth, moveth the ſide-ways upon the Earth, of which formerly was known but Twelve, but now Thirty Two, as may be ſeen by the Mariners Compaſs, of which we ſhall not need to diſcourſe. The four Principal and Cardinal Winds are theſe; *Subſolanus*, *Fanonius*, *Septentrional*, and *Auſter*; or, Eaſt, Weſt, North, and South. *Subſolanus*, or the Eaſt-wind, is by Nature hot, dry, temperate, pure, and ſubtile; it preſenteth Health, is a Drier of things, raiſeth Clouds, and produceth Flowers. *Fanonius*, or the Weſt Wind, is cold and moiſt; it alſo favoureth and bringeth forth Flowers; cauſeth Rain, Thunder, and Sickneſs; diſſolveth Cold, and by Nature is cold and phleg-

phlegmatick. *Septentrional*, or the North Wind, is cold and dry, driving away Rain, causeth Cold, and preserveth Health; it is destructive to the Flowers of the Earth, and causeth Whirlwinds, thick Snow and Rain. *Auster*, the Meridional and South Wind, is hot and moist, compared to the Air, causing large Clouds and great Rain. *Aristotle*, and his Sect, define this Wind to be a hot and dry Exhalation, ingendred in the hollow Concavities of the Earth; and the Reason they give, wherefore the Motion thereof is not right upward and downward, as well as side-long, is because that whilst by his Heat he striveth to mount up, and carry his Course thorough the three Regions of the Air, the middle Region, by reason of its Cold, doth always beat it back; therefore (together with other Exhalations rising out of the Earth) his Motion is forced to be rather round than upright. Now the Cause why it bloweth more sharply at one time than another, and at some times not at all, is according to the Fumes that arise out of new Exhalations out of Floods, Fens, and Marshes, which augments his Force, the Defect whereof may either allay or increase it. Likewise Mountains, Hills, and Woods, (by reason of the Earth's Rotundity) may hinder its Force from blowing in all places equally; whereas upon the plain and broad Sea it bloweth with an equal Force; concerning the ceasing thereof divers Reasons might be assigned; as, the Frost congealing the Pores of the Earth, from whence it should issue; or the Sun drying up the Fumes and Vapours that should increase it.

North Winds send Hail, South Winds Rain,
East Winds we bewail, West Winds blow amain;
North-East is too cold, South-East too warm,
North-West too bold, South-West doth no Harm.

Of

Of the Nativity of our Lord, falling on any of the Seven Days in the Week; thereby ſhewing the Diſpoſition of the Year.

IF the Nativity of our Lord fall on a *Sunday*, the Spring ſhall be windy, Summer moiſt, and a plentiful Harveſt; Oxen and Sheep ſhall greatly increaſe, Peace and Plenty ſhall flouriſh in the Land, Men ſhall be ſtout, valiant, and overcome their Enemies; he that flyeth ſhall be found, and Theft ſhall be proved. If it fall on a *Monday*, there ſhall be great ſtore of Froſt and Snow in the Winter, the Spring ſhall be moiſt, and the Summer dry; many Sheep ſhall die of the Rot; Wheat ſhall be dear; there ſhall be a plentiful Vintage; many Women ſhall die in Child-bed; to enterprize any thing it ſhall be proſperous; Theft done by Women ſhall ſoon be proved. If it fall on a *Tueſday*, the Winter ſhall be warm and moiſt, a late Spring, and dry Summer; Fruit ſhall be ſcarce, Peſtilential Diſeaſes ſhall reign throughout the Land, which ſhall ſweep away Thouſands; Bees ſhall die, and Sheep ſhall multiply; Men ſhall deſire to travel, and he that flyeth ſhall ſoon be found. If it fall on the *Wedneſday*, the Winter ſhall be exceeding ſharp and hard, much Froſt, Snow, and Hail; the Spring ſhall be wet and windy, Summer dry, with ſtore of Thunder; there ſhall be great ſtore of Graſs, and plentiful Harveſt; many ſhall attain to great Dignity and Promotion; Kings and Princes ſhall run through many Hazards; Young Men ſhall die, and Cattel ſhall multiply. If it fall on a *Thurſday*, there ſhall be a dry Spring, and a wet Summer; Grain ſhall fall, and there ſhall be great Plenty of Graſs. But if it doth rain on *Eaſter*-day, we ſhall have plenty of Graſs, but little good Hay; many Ships ſhall periſh on the Sea, many ſhall attain to great Wealth by the Practice of the Law, and he that declineth ſhall ſoon recover. If it be on a *Friday*, there ſhall be marvellous Floods in Winter, the Spring ſhall be moiſt, and the Summer dry; Wine and Corn ſhall be plentiful and good, Sheep ſhall proſper, the

ſmall

ſmall Fruits and Seeds of Gardens ſhall flouriſh, many great Men ſhall die, there ſhall be great Peace and Honour to all Kings and Governours. If it be on the *Saturday*, it ſhall be a good rainy Winter, the Spring ſhall be moiſt and warm, the Summer and Harveſt very good Weather, Swine ſhall many of them die, Sheep be diſeaſed, and abundance of Cattel periſh; there ſhall be great Plenty of Hay, Wine and Corn, but Fruit ſhall be ſcarce; many ſhall die ſuddenly: Begin no laſting VVork on *Saturday*, eſpecially towards the Evening.

Thus you ſee I have alſo affixed this old Prognoſtication, as I know it to be of Authentick Authority with many; being the dear Delight alſo of ſome ancient People, who diſcourſe much to this purpoſe, and of VVitches, on cold VVinter-nights by the Fire-ſide with a Pot of good Ale.

FINIS.

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